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Pulp Production in 1939 Up 6.6 Per Cent

Census of Manufacturers Report Just Issued Shows Total Output of Pulp Was 7,153,478 Tons In 1939, Compared With 6,713,576 In 1937 — Value Added By Manufacture Declined 12.2 Per Cent.

WASHINGTON, D. C., October 30, 1940—Manufacturers of pulp reported slight decreases in employment, wages, and value of products for 1939 as compared with 1937, according to preliminary figures compiled from returns of the Census of Manufactures for 1939 and just released by Director William Lane Austin, Bureau of the Census, Department of Commerce.

This industry, as constituted for census purposes, embraces establishments primarily engaged in the manufacture of pulp from wood and other fiber.

The value of products for this industry for 1939 amounted to $226,851,822, a decrease of 8.2% compared with $247,191,957 reported for 1937. However, the total production of pulp in 1939 was 7,153,478 tons, an increase of 6.6% compared with 6,713,576 tons for 1937.

The 1939 Census of Manufactures is the first census for which employees who were primarily engaged in distribution, construction, etc., activities have been called for separately on the schedules. It is not known how many of the wage earners reported for 1937 were engaged in distribution and construction and how may were engaged in manufacturing. Employees of the plants reported as engaged in distribution and construction activities in 1939 are not included in this preliminary report but will be included in the final report.

The wage earners primarily engaged in manufacturing in this industry in 1939 numbered 26,870, a decrease of 0.5% compared with 26,994 reported for 1937, and their wages, $33,145,835, fell below the 1937 figure, $33,570,346, by 1.3%.

Summary statistics for the industry for 1939 and 1937 are given in Table 1, and detailed production statistics in Table 2. All figures for 1939 are preliminary and subject to revision.

TABLE I.—SUMMARY FOR THE INDUSTRY: 1939 AND 1937

(Because they account for a negligible portion of the national output, plants with annual production valued at less than $5,000 have been excluded since 1919)

	1939	1937	Per cent of increase or decrease (—)
Number of establishments [1]	194	194	.....
Salaried personnel [2]	2,379	2,153	10.5
Salaries [2, 3]	$5,879,311	$5,150,655	14.1
Wage earners (average for the year) [4]	26,870	26,994	— 0.5
Wages [3, 4]	$33,145,835	$33,570,346	— 1.3
Cost of materials, supplies, fuel, purchased electric energy, and contract work [5]	$144,736,646	$153,651,946	— 5.8
Value of products [5]	$226,851,822	$247,191,957	— 8.2
Value added by manufacture [3]	$82,115,176	$93,540,011	—12.2

[1] Includes 8 mills for 1939 and 7 for 1937 manufacturing pulp exclusively from materials other than wood.
[2] No data for employees of central administrative offices are included.
[3] Profits or losses cannot be calculated from the census figures because no data are collected for certain expense items, such as interest, rent, depreciation, taxes, insurance, and advertising.
[4] The item for wage earners is an average of the number reported for the several months of the year and includes both full-time and part-time workers. The quotient obtained by dividing the amount of wages by the average number of wage earners should not, therefore, be accepted as representing the average wage received by full-time wage earners.
[5] Value of products less cost of materials, supplies, fuel, purchased electric energy, and contract work.

TABLE II.—PRODUCTS, BY KIND, QUANTITY, AND VALUE: 1939 AND 1937

	1939		1937	
	Short tons	Value (f.o.b. mill)	Short tons	Value (f.o.b. mill)
Pulp Mills industry, all products, total value	.....	$226,851,822	.....	$247,191,957
Pulp (wood and other fiber)	7,153,478	222,812,085	6,713,576	242,443,451
Other products (not classified in this industry)	.....	4,039,737	.....	4,748,506
Wood pulp, total	6,993,334	209,061,107	6,572,918	225,573,125
Mechanical, total	1,444,875	27,710,170	1,600,667	30,315,251
Not steamed	1,342,643	25,379,398	1,513,047	28,281,135
Steamed	102,232	2,330,772	87,620	2,034,116
Sulphite fiber, total	1,946,452	86,043,861	2,140,244	109,920,115
Unbleached	729,203	24,736,494	791,575	30,718,426
Bleached [1]	1,217,249	61,307,367	1,348,669	79,201,689
Sulphate fiber, total	2,962,657	72,939,469	2,139,087	59,437,736
Unbleached	2,538,204	55,242,263	1,923,937	51,096,623
Bleached	424,453	17,697,206	215,150	8,341,113
Soda fiber, bleached	441,565	19,710,156	[2] 507,548	[2] 23,465,719
Semichemical and other wood pulp	151,658	2,105,267	132,521	1,748,316
Screenings, mechanical and chemical [3]	46,127	552,184	52,851	685,988
Other pulp [4]	160,144	13,750,978	140,658	16,870,326

[1] Includes data for "Superpurified" and "Rayon and special grades" to avoid disclosing figures for individual establishments for 1939. For 1937: "Superpurified" and "Rayon and special grades" combined, amounted to 353,640 tons, valued at $23,871,039.
[2] "Unbleached" and "bleached."
[3] Combined to avoid disclosing data for individual establishments for 1939. For 1937: Mechanical, 9,674 tons, valued at $69,667; chemical, 43,177 tons, valued at $616,321.
[4] Principally pulp made from cottonseed-hull fiber, cotton-linters, rags, reclaimed paper, and straw.

Government Inquiry of Abitibi Co. Starts

Royal Commission Appointed By Ontario Government Holds First Meeting Nov. 4 — Bond, Shareholders and Creditors of Abitibi Co. To Be Heard—Timber and Water Power Greatest Assets.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., November 4, 1940—The Royal Commission appointed by the Ontario government to enquire into the affairs of the Abitibi Power and Paper Company, in receivership since 1932, will get down to work promptly November 4. The meetings will be held in the legislative chamber at the Provincial parliament buildings and will be open to the public. Security holders, shareholders, creditors and their representatives will be heard, as well as anyone else who has anything to say pertinent to the business. R. M. Fowler, assistant counsel, will arrange the times for appearing of those who wish to be heard. G. W. Mason has been appointed commission counsel and E. S. Thorne, registrar. Mr. Justice Charles P. McTague of the Supreme Court of Ontario will be chairman of the commission and will have with him Sir James Dunn, president of Algoma Steel Corporation, and A. E. Dyment, chairman of the board of Canadian General Electric Company.

Equity Interests Approve Commission

The action of the Ontario government in setting up this commission to try and straighten out the affairs of this gigantic enterprise has been lauded by spokesmen for equity interests as the right and proper thing to do, but the bondholders have received the announcement with much less enthusiasm. To the equity interests it appears to be at least a reprieve from complete loss of their investment. To the bondholders it seems to be an unjustified delay in the legal steps initiated to permit them to realize on their defaulted loan.

There still appears to be some confusion in the minds of many interested people concerning the authority of the government to step in at this time and say what shall or shall not be done. However, to the majority of those not directly interested in the disposition of the assets of the company at stake in the proceedings, the latest move of Premier Hepburn and his government appears to be only the performance of a necessary duty, and, indeed, to some, a legal obligation.

Wood and Power Are Greatest Assets

Plainly stated, the greatest value of the assets figuring in the Abitibi affairs are the timber and water power concessions granted the company by the Ontario government. The timber and water powers belong to the people and the concessions were granted in consideration of the employment they would create throughout Ontario's hinterland. The company failed, though much work proceeded under the receivership. Many proposals had been made to get the company out of receivership. Bondholders had succeeded in having the Supreme Court declare in favor of a judicial sale of the assets, which court later had denied a motion to have the assets distributed, allowing the junior securities holders a share in the distribution. If left with the court, some disposition would have to be made of the company's affairs. It seemed likely that the court could only permit the sale of the assets to satisfy the legal claims of the bondholders. The bondholders would naturally form a new company and carry on with the timber and water power concessions, but the bondholders would be getting a tremendously attractive wealth producing potential for a ridiculously low figure.

The government had said, through order-in-council, that any re-organization of the company would have to be satisfactory to the government or these timber and water power concessions would be cancelled. Later the government, in another order-in-council, declared that any re-organization would have to be "deemed" satisfactory to the government "or else". In appointing the Royal Commission the government has gone back to its original position and now states that "the commission has been appointed for the purpose of considering the whole matter and recommending to the government a plan of reorganization which will be equitable to all interests concerned."

Bondholders Approval Not Sure

It is by no means certain as yet, however, that the bondholders will not renew their application for a judicial sale in the near future and before the Royal Commission has reported. The probability however, seems to favor a delay until the commission has completed its hearings.

Exactly what measures can be used to bring about any re-organization plan which the new commission finds acceptable and recommends to the government is not altogether clear. Probably the Province could resort to its powers of control of timber limits and water powers to persuade opposing interests to accept whatever scheme may be worked out. The move by the province is generally looked upon as a recognition of its responsibility, as has been urged in many responsible quarters.

New Plan Offered by Osler & Co.

In the meantime, still another plan for the reorganization of Abitibi Power and Paper Company has been offered by A. E. Osler & Company, as intimated on this page last week. Gordon Taylor, a partner in the Osler firm, states that the plan has been sent to the various committees.

A feature of the plan is that interest on unpaid interest is not considered in arriving at the total bondholders' claim. This makes a difference of almost four million dollars in the amount claimed by the bondholders. It keeps the claim down to $67.6 millions as against the liquidator's figure of $71.5 millions.

Under the Osler plan the bondholders would get $1,000 in new five per cent income bonds, plus 12

shares of new common for the total claim for interest and principal of each $1,000 present bond.

To each holder of a 7 per cent preferred share would go 1½ new common shares. The 6 per cent preferred would get ¾ of a new common share for each share held; and the common, 1/30 of a share of common for each present share.

This would give bondholders all the new 5 per cent income bonds and 64.93 per cent of the outstanding common. The remaining outstanding common would go 1.68 per cent to 7 per cent preferred holders, 29.33 per cent to holders of 6 per cent preferred, and 4.06 per cent to common shareholders.

Capitalization of the new company would be $48.3 millions of 5 per cent income bonds, and one million shares of no par value common of which 892,068 shares would be issued on the basis of $20 a share. Interest requirements for the new bonds would be $2.4 millions and a sinking fund to begin 1940 is suggested of 1 per cent of bonds outstanding for the first five years, and increasing ¼ per cent each year to a maximum of 3 per cent. This sinking fund would be subject to postponement at the discretion of the board of directors. No dividends would be paid on the common until one full year's interest and sinking fund requirements had been set aside.

May Open Mechanic Falls Mill

MECHANIC FALLS, Me., October 31, 1940—Voters strongly endorsed the plan presented by a Philadelphia paper manufacturer in connection with the operation of the town's chief industry, the Waterfalls Paper company, Monday night at Murray hall.

First selectman John E. Merrill said he had called the special meeting to test the sentiment of the voters in the board of selectmen dealings with Fred Macy, representative of the A. M. Collins Paper Company of Philadelphia.

In conferences last week with the board, Mr. Macy discussed reopening of the plant and the willingness of his client to pay the tax assessment of nearly $20,000 against the Waterfalls Paper Company. But for the next five years, Mr. Macy suggested an $8,000 annual reduction in assessment.

At the meeting the proposition was put before the voters. At the outset Frank Linnell, judge of the Municipal court in Auburn and the town's counsel, explained that whatever action they may take at the meeting was not legal.

The only body that could assess taxes, Judge Linnell said, was the Board of Selectmen.

Following Judge Linnell's explanation, Harold Briggs, manager of the bank here, introduced a motion which was carried as follows:

"To act upon the proposition of Fred Macy of Philadelphia to give its approval of the deferment of 1940 taxes, to be collected in three installments in the next three years, with interest and the next five years, the tax charge be $12,000 regardless of who the tax assessors might be; said reduced tax charge to begin April 1, 1941."

Macy was not present at the meeting. It was understood he was in New York awaiting word from the Beauregard Company in Norway, Europe, holders of a mortgage against the Waterfalls Company.

Until consent by the mortgage holders to the proposition presented by Macy can be obtained, definite commitments must be held in abeyance, Mr. Merrill said.

Manufacture of Pulp Goods Decreases

Manufacturers of pulp goods reported decreased activities for 1939 as compared with 1937, according to preliminary figures compiled from returns of the Census of Manufactures for 1939 and just released by Director William Lane Austin, Bureau of the Census, Department of Commerce.

This industry, as constituted for census purposes, embraces establishments primarily engaged in the manufacture of all kinds of pressed and molded pulp goods, such as pulp plates and utensils, and all papiermâché articles, except statuary.

The wage earners primarily engaged in manufacturing in this industry in 1939 were 701, a decrease of 14.4 per cent compared with 819 reported for 1937, and their wages, $818,699, were less than the 1937 figure, $873,093, by 6.2 per cent. These decreases may be partially accounted for by the fact that the 1939 Census of Manufactures questionnaire, for the first time, called for personnel employed in distribution, construction, etc., separately from the manufacturing employees of the plants. It is not known how many of the wage earners reported for 1937 were engaged in distribution and construction and how many were engaged in manufacturing.

The value of the products of the industry for 1939 amounted to $3,826,393, a decrease of 5.3 per cent as compared with $4,041,554 reported for 1937. However, this decrease is caused largely by changes in the kind of products made, necessitating the reclassification of reports for important plants to other industries.

Summary statistics for the industry for 1939 and 1937 are given in Table I, and detailed production statistics in Table II. All figures for 1939 are preliminary and subject to revision.

TABLE I.—SUMMARY FOR THE INDUSTRY: 1939 AND 1937

(Because they account for a negligible portion of the national output, plants with annual production valued at less than $5,000 have been excluded since 1919)

	1939	1937	Per cent of increase or decrease (—)
Number of establishments	14	10	(*)
Salaried personnel [1]	93	95	(*)
Salaries [1, 2]	$190,025	$203,567	— 6.7
Wage earners (average for the year) [3]	701	819	—14.4
Wages [2, 3]	$818,699	$873,093	— 6.2
Cost of materials, supplies, fuel, purchased electric energy, and contract work [3]	$1,522,772	$1,474,564	3.3
Value of products [3]	$3,826,393	$4,041,554	— 5.3
Value added by manufacture [4]	$2,303,621	$2,566,990	—10.3

* Per cent not computed where base is less than 100.

[1] No data for employees of central administrative offices are included.

[2] Profits or losses cannot be calculated from the census figures because no data are collected for certain expense items, such as interest, rent, depreciation, taxes, insurance, and advertising.

[3] The item for wage earners is an average of the numbers reported for the several months of the year and includes both full-time and part-time workers. The quotient obtained by dividing the amount of wages by the average number of wage earners should not, therefore, be accepted as representing the average wage received by full-time wage earners.

[4] Value of products less cost of materials, supplies, fuel, purchased electric energy, and contract work.

TABLE II.—PRODUCTS, BY KIND AND VALUE: 1939 AND 1937

	1939	1937
1. "Pulp Goods (Pressed, Molded)" industry, all products, total value	$3,926,393	$4,041,554
2. Pulp goods made in this industry	3,587,393	4,041,554
3. Other products not classified in this industry	239,000	.....
4. Pulp goods made as secondary products in other industries	[1] 159,446	723,787
Pulp goods,[2] aggregate value (sum of 2 and 4)	[3] $3,746,839	$4,765,341

[1] Incomplete; complete figures will be given in final report.

[2] Pressed or molded dishes, egg-case liners, etc., data for which were not called for separately.

[3] See footnote 1.

SEC Defines Status of Water Power Co.

Wisconsin Valley Improvement Co. of Wausau Declared Not A Subsidiary of Wisconsin Public Service Corp. By Securities and Exchange Commission—Power For Fox River Mills—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., November 4, 1940—The Wisconsin Valley Improvement Company of Wausau, Wis., through which paper mills along the Wisconsin River enjoy a regularity of water power flow, is not a subsidiary of the Wisconsin Public Service Corporation or the Wisconsin Power and Light Company, according to a decision announced by the Securities and Exchange Commission in Washington.

Application had been made to the SEC to determine the improvement company's status, and a hearing was held October 4 in Washington. It was attended by W. E. Brooks, manager, Fred W. Genrich, secretary, and Leander W. Hackbart, bookkeeper.

SEC Explains Its Decision

The SEC said in its decision that while the Wisconsin Public Service Corporation and the Wisconsin Power and Light Company own a total of more than 52 per cent of the improvement company's voting stock, and while the Wisconsin Valley Improvement Company is subject to a controlling interest by the two utility companies, the commission believed that from the character of the improvement company's business and the extent of the statutory control resulting from the legislation under which the company was organized, that there appeared to be no danger to the public interest or to the interests of investors or consumers.

The company received a special charter in 1907 from the state, at the time it was organized. Originally, it was operated for the benefit of timber companies to control the water flow for log driving. Eventually it became an association of power dam owners, who merged smaller improvement companies into one cooperative organization to take over 24 dams for the regulation of flow for water power. Water storage was created to prevent spring floods and provide ample flow in dry seasons. There are now twelve companies paying tolls semi-annually for the benefits received, among them the Consolidated Water Power and Paper Company, the Marathon Paper Mills Company, Nekoosa-Edwards Paper Company, Whiting-Plover Paper Company, Wausau Paper Mills Company, Rhinelander Paper Company, Tomahawk Kraft Paper Company, the Wisconsin River Paper and Pulp Company and several public utilities.

More Power for Fox River Mills

Installation work has been started by the City of Kaukauna, Wis. on a 2,400-kilowatt generator and a 3,200 horse power water wheel at its new municipal power plant on the Fox River. An engineer from the Kaplan Automatic Waterwheel Company of York, Pa., is supervising installation of the water wheel.

The generator, operating 24 hours per day, will provide 1,728,000 kilowatts of power per month, augmenting the supply of power for paper mills in that area.

Concrete for the last 270-foot section of the dam will be poured this week. The barrier will be four and a half feet high, with the dam stretching across islands to the plant varying in height up to seven and a half feet. The layout is designed to handle 42,000 cubic feet of water per second, with three sluice gates, each discharging 18,000 cubic feet per second. The dam channel is 150 feet wide and six feet deep, the dam 2,425 feet long, plus 90 feet of sluice gates, and the tailrace below the new power house is 1,200 feet long.

Brick work on the power house is about completed. It is estimated the plant will begin production about December 15.

Further Patten Paper Co. Hearings Slated

Further hearings on the affairs of the former Patten Paper Company, Ltd., of Appleton and Kaukauna, Wis. are to be held in the United States court for the Eastern District at Milwaukee, Wis. on November 18. The proceedings are for reorganization under Section 77-B of the United States Bankruptcy Act, although the company has disposed of its mills. One matter to be considered is the application of the Columbian Paper Company for an order extending the time of filing claims. Another is the application of Attorney Paul V. Cary, trustee, for approval and confirmation of the report of W. L. Evans, special master, covering the hearing on, and determination of the revolving fund claims against 5,000 shares of common stock of Northern Paper Mills, Green Bay, Wis., deposited in trust with W. P. Wagner, trustee, for the security of certain persons.

Plank Dandy Rolls in Good Demand

Steady growth has been enjoyed by J. J. Plank and Company, Appleton, Wis., manufacturers of dandy rolls. The firm was founded in 1908 and has enjoyed a continually expanding market, and now has 20 persons on its payroll. Its business has been the most extensive during the last five years, and an extensive library is now maintained of the watermarks of its customers. In the 32 years of its existence, the company has never been obliged to lay off an employee. J. J. Plank is president and founder of the company.

Marathon Explosion Not Serious

A gasoline explosion at the Marathon Paper Mills Company, Rothschild, Wis., caused first and second degree burns to Elmer Gosh, an employee. The blast was caused when an acetylene torch ignited fumes from gasoline used by workmen who were cleaning screens. Gosh is confined to the hospital, but his condition was reported as favorable. Windows in the machine room were blown out by the blast, probably being the means of saving others from injury.

Chicago Paper Men Optimistic About Future

Lagging Demand From Printing and Advertising Trades Continues To Keep Sales Volume of Paper Down With Current Price Situation Rather Weak—Board and Waste Markets Reported Firm.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., November 4, 1940—The Chicago paper market found itself in the "pre-election" doldrums this week but continued optimistic about the future. The strange picture of a costly raw material market and heavy operation costs confined to a demand sufficiently lethargic to keep prices comparatively soft, though unyielding, continued to dominate the scene. The only answer as far as Chicago is concerned continues to be found in the lack of business in the printing and advertising trades. Particularly in the past month, unseasonal weather and hesitancy because of political and war conditions have combined to keep jobbers and supply houses from anything but sporadic demand.

Sulphites showed no change during the week. Groundwoods followed the August and September trend of slightly declining business while newsprint markets featured a similar characterization. Books and covers held the same position as last week. Waste papers showed no indication of a marked change though corrugated were said to be not as strong as a week ago. However, the general waste paper market was firm. Board conditions continue good.

Salesmen Enjoy New Feature

In line with keeping themselves completely abreast of events of the day and in the interest of having a greater attendance at its weekly luncheons the western division of the Salesmens Association of the Paper Industry has combined its regular weekly sessions with the Monday "Wailing Wall" luncheons held on the same day at the Hotel Sherman. The "Wailing Wall" is a version of the "Monday morning quarterback" idea and regularly attracts hundreds of football fans who rehash Saturday's games and enjoys movies of headline battles. The luncheons have proven very helpful not only in swelling attendance at the meetings but also in keeping the sales executives up-to-date on their regular sports wagering.

The salesmen congregate at three or four tables regularly reserved for them, enjoy the football treats, watch the movies and then adjourn to their own private room to discuss paper business or any other problems that may come up. According to Courtney Reeves, Allied Paper Mills and vice president of the Association, attendance has been good and the combination of football and business sufficiently well timed to give the sales executives ample opportunity to play and to work. Out of town paper executives who like their football and association with members of their own industry are invited to remember the "Wailing Wall" luncheons which will last through to the first of December.

Lovejoy Adds to Sales Force

The Lovejoy Flexible Casting Company, 4936 West Lake street, Chicago, has recently added two experienced sales agents to its selling force in developing interest in the new L-R Flexible Couplings designed for specific use in the paper mills of the country. The two are J. M. Ward and C. R. Faunt both of whom are exceptionally well equipped to furnish complete engineering advice on couplings for paper mill procedure.

J. Bloom & Co. Hold Open House

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., October 28, 1940—With more than 300 visitors, including manufacturers, prominent officials from various paper houses and other friends, Jacob Bloom & Co. held open house from October 14 to October 19 on the occasion of their removal from 124 Pearl street to their own building at 125 Pearl street, where they have much larger quarters. Among the visitors was a friend of Mr. Bloom's earlier years, a former newsboy, who sold papers with him at Roxbury crossing. On Saturday, October 19, a large number of friends from New York City were his guests. The Trinity Bag and Paper Company, of New York City, sent a beautiful clock for the office. Mr. Bloom, who was the recipient of many letters and telegrams, wishes to thank members of the paper trade for their kind expressions of congratulation.

On the street floor of the building, the company has installed new steel shelving and new steel counters for the handling of several grades of fine paper, including a general line of printing papers. Accessibility to the street floor makes "sidewalk service" for customers and merchandise can be easily loaded from the rear entrance of the building. All the goods are stocked in the building.

Associated with Mr. Bloom are his brothers, Bernard Bloom and Maurice Bloom, and George Meyers.

The company has another store at 32 Hampden street, Springfield, Mass., of which Barney Levine and Samuel Levine are in charge.

Mr. Bloom started in the paper business November 1, 1907, as errand boy for Lester P. Winchenbaugh at 88 Broad street. He worked his way to city salesman and went into business for himself in 1917 at 271 Franklin street, later removing to the Pearl street address.

Box Men to Meet at Atlantic City

The 23rd annual convention of the National Paper Box Manufacturers Association will be held at Hotel Traymore, Atlantic City, N. J., June 8 to 11, 1941, according to an announcement made by Charles K. Shaw of Shaw Paper Box Company, Pawtucket, R. I., and president of the paper box organization.

A buyers' fair, exhibiting machinery in operation and supplies, will be held in conjunction with the convention at the same hotel.

Obituary

Otis Daniell

Otis Daniell, prominent at one time in the paper industry and a son of former Congressman Warren F. Daniell of Franklin who was one of the leading paper manufacturers in the state 40 years ago, died suddenly at his Lake Winnisquam home at Tilton, N. H., on October 22, at the age of 74.

Born in Franklin, the son of Warren F. and Abbie Sanger Daniell, he was educated at private schools in Duxbury and Plymouth, Mass., and at Massachusetts Institute of Technology. He occupied executive positions in paper mills at Franklin and in Livermore Falls, Me.

In 1903 he married Miss Ethel Pillsbury and came to Tilton to reside. He had interests at one time in the public water works and electric light system. For several seasons he and his family had spent winters in Miami Beach, Fla., where he was a member of the Committee of One Hundred.

He was one of the leading fox hunters of New England for several years and was also prominent as a collector of antique furniture and glass. He had traveled extensively.

Survivors are his widow and one daughter, Mrs. James S. Schramm, and two granddaughters, of Burlington, Iowa, and three brothers, Eugene S. of Franklin, W. Fisher of Santa Barbara, Cal., and Jere R. of New London, Conn.

Funeral services were held at the Winnisquam residence. Burial was in Park Cemetery.

Carroll B. Wilkins

[FROM OUR REGULAR CORRESPONDENT]

NASHUA, N. H., November 4, 1940—Carroll B. Wilkins, 55, executive of the Nashua Gummed & Coated Paper Company, died at a Binghamton, N. Y., hospital November 1 of injuries suffered in an automobile accident a few days previous.

Mr. Wilkins, with Karl Hines and Geirge H. O'Neil, company employes, was en route home when the car operated by Mr. Wilkins skidded on wet leaves and overturned.

He was born in Nashua, January 21, 1885, and was graduated from the Nashua High School and the University of New Hampshire. For several years he was manager of the waxing division of the Gummed & Coated Paper Company. He was a member of the Nashua Country Club.

His widow is living.

Emil Klein

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., November 4, 1940—Emil Klein, who was employed by Thilmany Pulp and Paper Company, Kaukauna, Wis., for 43 years, was killed in an automobile accident at a highway intersection near Appleton, Wis., where he resided, Wednesday afternoon, October 30. He was driving a car which collided with a large truck, and he died instantly. His wife and Mrs. A. J. Kranhold, another passenger, died later of injuries suffered at the time.

Mr. Klein was 64 years old. He was born in Belgium February 14, 1875. He was superintendent of Thilmany company's division at Appleton, Wis., until it was discontinued, and retired from active duty about a year ago. He is survived by three daughters and two sons.

Funeral services were held at St. Joseph church at Appleton Monday morning, November 4, and burial was made in the parish cemetery.

Patrick E. McAuliffe

Patrick E. McAuliffe of 369 South Union st., Burlington, Vt., treasurer and manager of the McAuliffe Paper Company, Inc., died of a heart attack on October 25 in St. Vincent's hospital, New York, at the age of 67. He was for 54 years in the paper and book business in this city. Mr. McAuliffe suffered a heart attack last Sunday while staying at the Woodstock hotel in New York. He was later moved to the hospital.

At the age of 13, he entered the employ of Samuel Huntington, a book and paper merchant in this city at that time. In 1912, he joined the newly organized McAuliffe Paper company, which was then located in the C. P. Smith building on College street.

Active in club and fraternal circles, he was a charter member of DeGoesbriand Council, Knights of Columbus, of which he was a past grand knight, past state deputy and a past master of the Fourth Degree Assembly; also a member of St. Vincent De Paul society, the Catholic Order of Foresters, Burlington Rotary club, Burlington Country club, Burlington Elks lodge, National Stationers' association, United Commercial Travelers of America; was a member of the Fletcher Free Library commission, vice-president and a director of the Burlington chamber of commerce and for several years a charity commissioner.

Surviving are his widow, four daughters, two grandchildren and three brothers.

Properly Classified as Surface Coated

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 30, 1940—Commissioner of Customs has written to the Collector at Odgensburg, N. Y., stating that surface-coated paper of American manufacture, which has been sent abroad in rolls approximately five inches in width and sixteen inches in diameter to be perforated at evenly spaced intervals along the two sides of the paper, and dedicated to a particular use in a particular machine as a result of such perforation, is properly classifiable upon its return to the United States, in rolls about three inches in diameter, as articles wholly or in chief value of surface-coated paper, dutiable at 5 cents per pound and 20% ad valorem under paragraph 1405 of the Tariff Act of 1938.

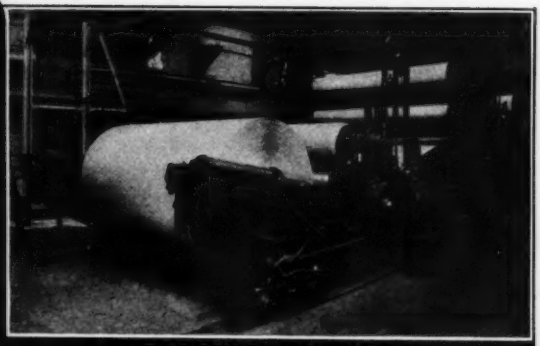
The process of perforating the surface-coated paper does not constitute an alternation within the meaning of paragraph 1615(g) of the tariff act, as amended by the Customs Administrative Act of 1938, and duty should be assessed upon the total value of the merchandise in its condition as imported, in accordance with the provisions of section 402 of the tariff act. As this ruling will result in the assessment of duty on such merchandise at a rate higher than that heretofore assessed under a uniform practice, it should be applied only to such merchandise when entered for consumption or withdrawn from warehouse for consumption after 30 days after this abstract is published in the weekly Treasury Decisions.

BELOIT

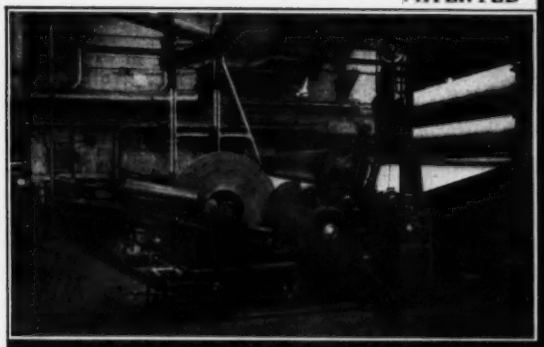
BOARD MACHINE

Reel

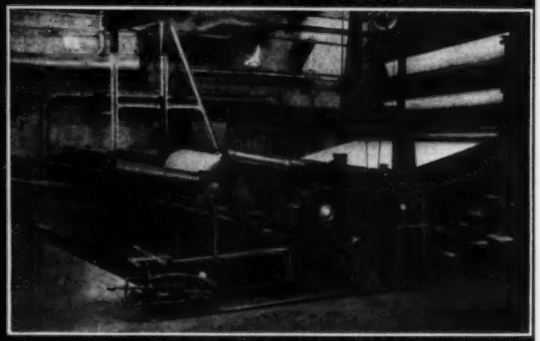
PATENTED



STARTING POSITION



FINAL WINDING POSITION



TRANSFER POSITION

DESIGNED FOR VERY HEAVY DUTY—TO WIND UP TO 78" DIAMETER ROLLS.

AIR PRESSURE, INDEPENDENTLY APPLIED TO FRONT AND BACK SIDES OF REEL SPOOL, MAINTAINS CORRECT WINDING CONDITION FOR GOOD ROLLS.

AIR PRESSURE CAN ALSO BE USED TO RELIEVE THE WEIGHT OF THE ROLL BEING WOUND.

NO BROKE WHEN CHANGING SPOOLS.

CAN BE INSTALLED ON PRESENT MACHINES.

THE BELOIT WAY IS THE MODERN WAY

BELOIT IRON WORKS PAPER MACH'Y BELOIT WIS

BELOIT IRON WORKS

BELOIT
WISCONSIN

The New "Rayox"

Since the adoption of titanium dioxide some years ago by the paper industry, the importance of this pigment as an opacifying and whitening agent has prompted the R. T. Vanderbilt Company staff to carry on a continuous development program directed toward increasing the efficiency of "Rayox" in paper making.

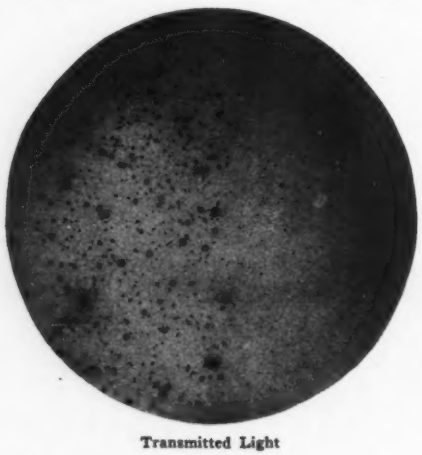
A problem of primary importance has been the satisfactory elimination of agglomerates which are not readily broken down into their individual component particles when the pigment is dispersed in water. Since these agglomerates are composed of many individual particles, an agglomerated condition in a water slurry reduces the effective number of particles present and thereby lowers the opacity or hiding power of the pigment.

As a result of the Vanderbilt research program, a new type of "Rayox" has been developed which disperses in water so completely that relatively few agglomerates remain. The new pigment has also been improved in other characteristics. The perfected dispersion characteristics of the new "Rayox" result in greater efficiency of the pigment in the beater and serve also to give higher solids in coatings.

Agglomerate content. Originally "Rayox" had an agglomerate content in the range of 0.3% to 0.8%. The new improved "Rayox" shows an agglomerate content approximately one-tenth of the old figures. This reduction is sufficient to produce a marked increase in smoothness, brightness and gloss when improved "Rayox" is used in coating, the dispersed particles yielding greater optical value than aggregates when present on the sheet. A similar increase in efficiency is obtained when the new "Rayox" is used in filling because better dispersion results in higher retention of pigment by the fibers and in greater opacity in the sheet.

In order to yield maximum value in paper making, titanium dioxide should be as nearly as possible, 100% dispersible. Formerly, "Rayox", in a four-hour suspension test, showed a suspension of approximately 85%. The new improved "Rayox" now available shows a suspension of approximately 95%, which factor is responsible for the added brightness and opacity which the "Rayox" produces in the finished paper product.

Old Rayox New Rayox



Transmitted Light

FIG. 1

Old Rayox New Rayox

Incident Light

FIG. 2

Exhaustive tests conducted under operating mill conditions have definitely established the superiority of the new "Rayox" over any other form of titanium dioxide available.

Paper manufacturers who take pride in their output, Sales Managers who appreciate the easier saleability of an improved product and production men in the Paper Industry who realize that these improvements can be achieved at no additional cost, welcome the new "Rayox" as one of the greatest pigment improvements offered to the Paper Industry in recent years.

Story of Asten-Hill Trade-Mark

"The Story of Yang-Yin, the Asten-Hill Trade-Mark," lately published by the Asten-Hill Manufacturing Company, Scott's Lane, Philadelphia, Pa., is an interesting contribution, enclosed in a typical hand-crafted paper cover and string-bound, similar to the Chinese method of book binding.

The text is devoted to a description of the circular Chinese symbols, Yang-Yin, which the Asten-Hill Manufacturing Company has adopted for a trade-mark for the widely known Asten-Hill dryer felts and which symbol appears on the company's letterhead and in its advertising.

Following the Chinese custom, the title page of the book is at the back of the publication and the reader proceeds to read toward what European custom has designated the front of the book.

The orgin of the seal or symbol known as Yang-Yin, is buried in antiquity but much of the historical interest and significance associated with this symbol and its various applications to jewelry, designs of rugs, etc. by early Chinese craftsmen is to be found in the pages of this unusual little book, which also contains a description of the Chinese method of making paper.

Fire Damages Muncie Paper Stock Co.

MUNCIE, Ind., November 4, 1940—A fire here late last week destroyed a warehouse of the Muncie Paper Stock Company and spread to an adjoining business. Origin of the fire was not determined.

N. P. T. A. Announces Winners

The National Paper Trade Association announces the winners of its first weekly awards in the current "Get Out The Vote Campaign." These winners were selected from among 130 salesmen who submitted the best selling answers to a prospective customer who said to the salesman "I've been buying from my present source for years—I'm entirely satisfied."

In all, seven questions are being submitted to the salesmen and the names of the winners will be announced as they are selected. Also, each of the salesmen entered in the campaign will be in line for winning one of the twenty-five grand prizes to be awarded at the end of the campaign.

The list of winners include:

1st Prize—Charles H. Gravett, the Scioto Paper Company, Columbus, Ohio.

2nd Prize—H. J. Noth, Peterson Paper Company, Davenport, Ia.

3rd Prize—Wm. S. Knox, Knox & Schneider, Chicago, Ill.

4TH TO 8TH PRIZES

Don Van Ostenberg, Beecher, Peck & Lewis, Detroit, Mich.

Henry F. Struble, Berkshire Papers, Inc., Chicago, Ill.

Robert N. Benham, Wilcox-Mosher-Leffholm Co., Minneapolis, Minn.

Paul W. Clark, Ostermeyer Paper Co., Indianapolis, Ind.

M. Ralph Schafer, Beecher, Peck & Lewis, Detroit, Mich.

HONORABLE MENTION

F. C. Anderson, Wilcox-Mosher-Leffholm Company, Minneapolis, Minn.

Wilbur E. Boyer, Andrews Paper House of York, York, Pa.

Streeter Bush, Stone & Forsyth Co., Boston, Mass.

Walter J. Gerving, Carter, Rice & Co., Corporation, Portland, Ore.

A. J. Klein, Wilder Brothers Company, Philadelphia, Pa.

Ernst Lieben, Yorkville Paper Company, New York, N. Y.

Leon Nack, A. E. MacAdam & Co., Inc., Brooklyn, N. Y.

Robert F. Polson, Peterson Paper Company, Davenport, Ia.

Charles E. Schenck, Knox & Schneider, Chicago, Ill.

Oscar W. Schumann, Beecher, Peck & Lewis, Detroit, Mich.

The following are the winners of the second weekly awards in the current "Get Out the Votes Campaign." These winners were selected from among 128 salesmen who submitted the best selling answers to a prospective customer who said to the salesmen "I can beat your paper both in quality and in price."

1st Prize—M. Ralph Schafer, Beecher, Peck & Lewis, Detroit, Mich.

2nd Prize—R. R. Murphy, Peterson Paper Company, Davenport, Iowa.

3rd Prize—Gordon D. Berg, Spokane Paper and Stationery Company, Spokane, Wash.

4TH TO 8TH PRIZE WINNERS

Howard C. Tatman, Standard Paper Company, Tacoma, Wash.; W. S. Roe, B. F. Bond Paper Company, Baltimore, Md.; C. M. Watterson, Peterson Paper Company, Davenport, Iowa.; Charles E. Schenck, Knox & Schneider, Chicago, Ill.; Wm. Geo. Harbers, John C. Streibich Company, Peoria, Ill.

HONORABLE MENTION

Edward Brown, Ostermeyer Paper Company, Indianapolis, Ind.; Harry M. Cruse, Crescent Paper Company, Indianapolis, Ind.; Walter J. Gerving, Carter, Rice & Co. Corp., Portland, Ore.; Charles H. Gravett, The Scioto Paper Company, Columbus, Ohio; Arthur C. Iobst, Lehigh Valley Paper House, Allentown, Pa.; William A. Murphy, Stone & Forsyth Company, Boston, Mass.; Don Van Ostenberg, Beecher, Peck & Lewis, Detroit, Mich.; James E. Shearer, Standard Paper and Woodenware Company, Kansas City, Mo.; Irving Sholtz, Yorkville Paper Company, New York, N. Y.; L. E. Stevens, American Paper Company, Milwaukee, Wis.; Ellis J. Thompson, A. E. MacAdam & Co., Inc., Brooklyn, N. Y.; A. H. Whitley, Jr., Parker Paper Company, High Point, N. C.

St. Regis Modernizes Plants

DEFERIET, N. Y., November 4, 1940—A modernization program instituted by the St. Regis Paper Company this year at several of its branch plants has resulted in a large expenditure. About $400,000 was spent at the branch here where a fifth paper machine was added and placed in commission a few weeks ago. The manufacture of chemical pulps has been increased, improved and made more economical through the installation of the Chemipulp process. At Trenton, N. J., about $350,000 was spent in expanding and improving the plant of the Panelyte Corporation, a subsidiary recently dissolved and merged into the company proper. A new steam plant was installed and new equipment placed in the mill for increasing production, which consists of plastic materials for refrigeration, the automotive, industrial and electrical markets. Improvements costing a total of $175,000 have been made at branch plants at Carthage, Herrings, Oswego and other places. During the balance of the year it is said that about $75,000 remains to be expended.

Boston Paper Men to Meet

BOSTON, Mass., November 4, 1940—At the fall meeting of the Boston Paper Trade Association, to be held at the Exchange Club this city, November 13, Chester Scott Howland is to speak on "Hunting Big Game of the Sea," with moving pictures. The membership committee has approved the application of Guy S. Chace, of the Paterson Parchment Paper Company, Bristol, Pa., for limited membership. Officers of the organization are: President, Robert M. Stone; 1st vice president, Irving N. Esleeck; 2nd vice president and acting secretary, John H. Brewer; treasurer, T. Charles Casey.

Boston Paper Men to Hold Luncheon

BOSTON, Mass., November 4, 1940—A luncheon meeting of the Fine Paper Division of the New England Paper Merchants Association is to be held Thursday, November 7, at the Boston Chamber of Commerce with Vice President Frederick G. Lockwood presiding.

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 6, 1940—Government Printing Office has received the following bids for 5,000 pounds of 24 x 36 rope manila paper in 48-inch rolls: R. P. Andrews Paper Company, 21 cents; Mathers-Lamm Paper Company, 16.5 cents; and Paper Corp. of U. S., 11 cents.

For 9,450 pounds (63,000 sheets) of 29 x 41 India tint supercalendered book paper: R. P. Andrews Paper Company, 6.05 cents; Barton, Duer & Koch Paper Company, 6.7 cents; Mudge Paper Company, 6.25 cents; Mathers-Lamm Paper Company, 6.7 cents; Paper Corp. of U. S., 5.75 cents; Stanford Paper Company, 6.53 cents.

For 157,275 pounds (2,150,000 sheets) of 50% rag, white bond paper: Cauthorne Paper Company, Inc., 11.89 cents; Paper Corp. of U. S., 11.5 cents; Old Dominion Paper Company, 13.887 cents; Baxter Paper Company, 10.17 cents; Mudge Paper Company, 11.11 cents; Mathers-Lamm Paper Company, 10.87 cents; Aetna Paper Company, 10.49 cents; and R. P. Andrews Paper Company, 10.17 cents.

For 144,000 pounds of 21 x 32, 50% rag, white bond paper: Cauthorne Paper Company, 11.38 cents; Paper Corp. of U. S., 11.5 cents; Old Dominion Paper Company, 13.887 cents; Baxter Paper Company, 10.17 cents; Mathers-Lamm Paper Company, 10.87 cents; Aetna Paper Company, 10.49 cents; and R. P. Andrews Paper Company, 10.17 cents.

For 4,000 pounds (44,000 sheets) of 22¾ x 31½, 100% rag, white ledger paper: Cauthorne Paper Company, Inc., 22.43 cents; Paper Corporation of U. S., 22 cents; Walker Goulard Plehn Company, 23.38 cents; Mathers-Lamm Paper Company, 23 cents; and R. P. Andrews Paper Company, 22.43 cents.

For 13,150 pounds of 75% rag, 32 x 48 No. 32 litho map paper and 10,250 pounds of same 30 x 40: Mudge Paper Company, 12.71 cents; Old Dominion Paper Company, 21.47 cents; Paper Corporation of U. S., 14.65 cents; Cauthorne Paper Company, Inc., 15.11 cents; and Walker Goulard Plehn Company, 17 cents.

For 9,775 pounds of 75% rag, 38 x 48 No. 40 litho map paper and 6,000 pounds of same 36 x 52: Mudge Paper Company, 12.23 cents; Old Dominion Paper Company, 21.47 cents; Paper Corporation of U. S., 14.1 cents; Cauthorne Paper Company, 15.11 cents; and Walker Goulard Plehn Company, 17 cents.

For 57,600 pounds (600,000 sheets) of 20 x 25 Quaker drab antique M.F. cover paper: Marquette Paper Company, 7.3 cents; R. P. Andrews Paper Company, 7.24 cents; Barton, Duer & Koch Paper Company, 7.77 cents; Stanford Paper Company, 7.65 cents; Mudge Paper Company, 7.32 cents; Whitaker Paper Company, 8.37 cents; Old Dominion Paper Company, 7.829 cents; Cauthorne Paper Company, 6.84 cents; and Paper Corporation of U. S., 8.37 cents.

For 10,000 pounds (70,000 sheets) of 23 x 36 75% rag, white ledger paper: R. P. Andrews Paper Company, 15.03 cents; Stanford Paper Company, 15.58 cents; Old Dominion Paper Company, 19.48 cents; and Paper Corporation of U. S., 14.8 cents.

For 26,550 pounds (300,000 sheets) of 50% rag, 2? x 36 white bond paper: Aetna Paper Company, 10.54 cents; R. P. Andrews Paper Company, 11.37 cents; Stanford Paper Company, 11.12 cents; Old Dominion Paper Company, 13.48 cents; Mudge Paper Company, 11.09 cents; and Paper Corporation of U. S., 13.45 cents.

Prosperity Returns to Howland

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Me., November 4, 1940—A year ago, Howland, a pleasant little town a few miles from Bangor, where the Piscataquis and Penobscot rivers join, was flat on its back. About one quarter of its population had moved away, and the remaining three quarters were battling the blackest siege of hard times the town had ever known. Today, through strong community cooperation and an indomitable spirit, Howland is on the road back to recovery, with two large new industries moving into town, merchants doing a brisk business and the general outlook a hopeful one.

In June, 1939, Howland had reached its lowest ebb. At that time, 42 men banded together as the Howland-Enfield Board of Trade. Their aim was to find a way back to a reasonable if moderate degree of prosperity for the dying town. Knowing that they had to find industries to move in or give up completely, they worked long and hard, and traveled many hundreds of miles to put the advantages of their community before industrialists.

Finally, they met with success. They interested executives of the Atlas Plywood Corporation and the Northern Krafts Corporation, and after a period of negotiations during which a petition signed by 400 residents of Howland was placed before the companies (pledging the utmost cooperation), the Atlas Plywood Corporation purchased the large mill buildings of the Advance Bag Company, leasing a portion to the Northern Krafts Corporation.

Repairs, renovations and additions are being made on the buildings at the present time, and both mills are employing large crews, with a definite assurance of more to be hired as the work progresses.

"Don't let people think this place is turning into a Mecca for job hunters," they tell you. "We'll have all we can do to find steady work for our own people, but if we can do that—and it seems as though we should be able to—Howland will prosper again."

Howland's whole industrial life has been built around mills. The Howland Falls Pulp Company's wooden mill was built in 1890, and was burned down in 1893. A brick building housing the mill was raised after the burning in 1893, but it failed in December 1896. It reopened soon again, however, under the somewhat ambiguous title of John C. Gerald S. & E.

In the Autumn of 1897, it was reorganized after a bitter tax exemption fight as the Howland Pulp Company. The sole manufacture before this had been wet pulp, but at that time a large dryer was installed. It was under that management until 1904, when it was sold to two brothers, George and Fred Babbitt of Bellows Falls, Vt., who operated it as the Howland Pulp and Paper Company. In 1916, the mill changed hands once more, being purchased by E. C. Lindsay, who named it the Howland Pulp and Paper Corporation. This business was merged with the Advance Bag and Paper Company in 1921, operating until March of last year when it suspended operations indefinitely.

Delaware Shipper to Dine

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., November 4, 1940 — The fourth annual dinner of the Delaware Valley Shippers' Association will be held on December 2nd at 7 P. M., at Rittenhouse Hotel, 22nd and Chestnut streets, Philadelphia. Tickets are $2.00 each and reservations must be in by November 26. John Butterworth, secretary of the association, states that a very elaborate program of entertainment is under way and the affair will be bigger and better than last year. For tickets and information, any member of the association may be contacted or the secretary, John Butterworth, W. C. Hamilton & Sons, Miquon, Pa., will furnish information. The annual election of officers will take place at this meeting.

To Unveil Portrait of Dr. Herty

SAVANNAH, Ga., November 4, 1940—At the Herty Institute, during the Slash Pine Festival to be held in Waycross, Ga., November 11-16, a life-size portrait of the late Dr. Charles H. Herty, noted chemist and great benefactor of his beloved South, will be unveiled.

The portrait was done by George Van Saake, celebrated Dutch artist, and will be among the permanent possessions of the Herty Institute, which is designed to perpetuate the memory of the world-famous chemist whose name the institute bears.

The portrait of Dr. Herty, painted from favorite photographs furnished by members of the Herty family, if a gift to the Herty Institute by Van Saake.

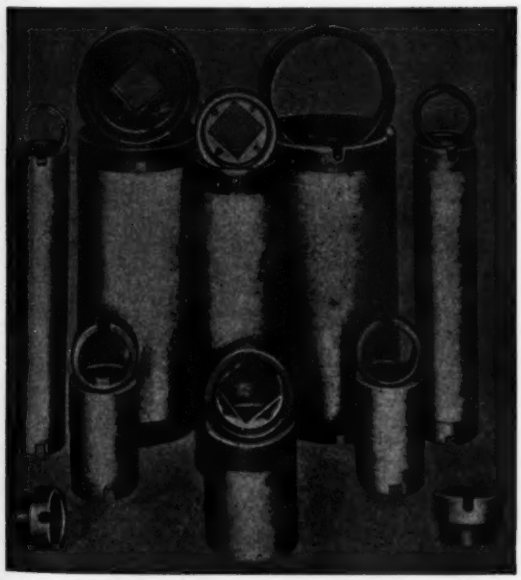
F. C. Huyck & Sons Build

[FROM OUR REGULAR CORRESPONDENT]

RENSSELAER, N. Y., November 4, 1940—F. C. Huyck & Sons have started construction of a new building which will be used for office purposes. The Sheehan Construction Company has the contract and it is announced that the new structure will be finished early in the spring at a cost of about $75,000. The new building will be of the same color and material as the present main structure and two stories high. It is to be located on the large plot of ground immediately north of the part of the building now occupied by the office force and will be connected with it. Although the mill property has been enlarged several times in order to cope with production advances, this is the first time that the office department space has been extended. Executives of the concern said the expansion was made necessary because of crowded conditions. A large part of the well kept lawn between the curbing and the north wing of the plant will disappear as a result of the expansion program.

To Hold Regional Meeting in Chicago

A regional meeting of the National Paper Trade Association will be held at the Stevens Hotel, Chicago, on November 12. Representative merchants from the middle Western states will be in attendance at this meeting where a variety of interesting current subjects will be discussed. These topics include: Mid-Year Survey, Current Market Conditions, Exclusive Sales Contract, Salesman's Contract, Certification Program, and Salesmen's Compensation.



ELIXMAN

CAPS — Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This new patented feature of reenforcement gives added strength and durability.

CORES

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.
CORINTH, N. Y.

CONSTRUCTION NEWS

Park Falls, Wis.—The Flambeau Paper Company, manufacturer of manila and other paper stocks, has approved plans for one-story addition to mill for expansion in digester department. General erection contract has been let to C. R. Meyer & Sons Company, 50 State street, Oshkosh, Wis., and work will be placed under way at once. No estimate of cost has been announced.

New York, N. Y.—Viverito Brothers, 262 Water street, paper stocks, have concluded arrangements for purchase of a four-story building at Front and Dover streets, and will remodel and improve for early occupancy. Increased storage and distributing facilities will be provided at new location, to which company will remove as soon as structure is ready.

Ridgefield, N. J. — The Standard Corrugated Case Corporation, 30th place and Hunters Point avenue, Long Island City, New York, N. Y., manufacturer of corrugated boxes and containers, has awarded general construction contract to Bonanno Construction Company, 1827 Bergen turnpike, North Bergen, N. J., for proposed new plant at Ridgefield, recently referred to in these columns. It will be one and two-story, 130 x 520 feet, and will cost over $100,000, with equipment, instead of smaller sum, previously noted. Superstructure is scheduled to be placed under way at once.

Mosinee, Wis.—The Mosinee Paper Mills Company, of kraft and other paper stocks, building papers, etc., has approved plans for miscellaneous improvements in mill, including a truck-loading enclosure, 37 x 55 feet; rebuilding of smoke stack at power house, and other work. General contract has been awarded to C. R. Meyer & Sons Company, 50 State street, Oshkosh, Wis., and work is being placed in progress.

Los Angeles, Calif.—The Goodwill Industries, 342 San Fernando road, have plans for new one-story building at Avenue 21 and Humboldt street, to be used exclusively for the storage and distribution of paper goods, with installation to include stacking and storing equipment and fixtures, conveying and loading equipment, and other facilities. Structure will total about 20,000 square feet of floor space, and is reported to cost in excess of $40,000, with equipment. Erection contract has been awarded to Steed Brothers, 714 Date avenue, Alhambra, Calif., who will proceed with work soon. Marsh, Smith & Powell, Architects' Building, Los Angeles, are architects.

St. Marys, Ga.—The St. Marys Kraft Corporation, St. Marys, an interest of the Gilman Paper Company, Gilman, Vt., and recently organized by officials of that company, as previously noted in these columns, has awarded contract to the Virginia Bridge Company, Roanoke, Va., for structural steel framing for proposed new mill near Kingsland, Ga., vicinity of St. Marys, totaling about 310 tons for initial buildings. Plant will consist of several large one and multi-story units, equipped for production of sulphite pulp. It will have a capacity of about 100 tons per day. Project, also, will include a power house, pumping station, machine shop and miscellaneous operating structures and is reported to cost in excess of $2,500,000, with equipment. Erection will be carried out with greatest possible speed, with intention of having mill ready for operation late next spring. Morton C. Tuttle Company, Park Square Building, Boston, Mass., is general contractor. George F. Hardy, 305 Broadway, New York, N. Y., is consulting engineer.

Middletown, Ohio—The Sorg Paper Company, manufacturer of book, bond, tissue and other paper stocks, is said to have plans under way for early rebuilding of portion of mill recently damaged by fire, including structure used for storage and distribution. Cost is reported over $50,000, including equipment.

Easton, Pa. — The Individual Drinking Cup Company, Inc., 24th street and Dixie avenue, manufacturer of paper drinking cups, plates, etc., has begun work on a three-story addition to plant, 100 x 120 feet, estimated to cost over $100,000, with equipment, and structure is scheduled for completion early next year. It will be equipped for considerable increase in present capacity. The Lauter Construction Company, 1613 Sansom street, Philadelphia, Pa., has the general erection contract. Company is a subsidiary of the Dixie-Vortex Company, 421 North Western avenue, Chicago, Ill.

New York, N. Y.—The Keystone Paper Company, Inc., 15 Washington place, general paper products, has leased ground floor space in building at 54 Franklin street, and will occupy for company headquarters, storage and distribution.

Elizabeth, N. J.—The new building now being erected at plant of Peter S. Schweitzer, Inc., 994 Newark avenue, manufacturer of cigarette papers and other special processed paper stocks, previously referred to in these columns, is part of a general expansion program to be carried at mill. Entire program is reported to cost over $500,000, with equipment, and will be carried out over a period of months. New structure, now about one-half completed, will be one-story, 60 x 104 feet, and installation of heavy machinery will proceed at once, including a 12-ton cylinder paper-making machine and auxiliary equipment. The addition is reported to cost over $70,000, with equipment. The D'Elia Building Company, Inc., 2761 Hudson boulevard, Jersey City, N. J., is general contractor. William E. Lehman, 972 Broad street, Newark, N. J., is architect; and J. Di Stasio & Co., 136 Liberty street, New York, N. Y., consulting engineers.

Nitro, W. Va.—The American Viscose Corporation, Delaware Trust Building, Wilmington, Del., manufacturer of cellulose rayon products, has awarded contract to the Lehigh Structural Steel Company, Allentown, Pa., for structural steel framing for new additions to mill at Nitro. Work will include a three-story structure, 30 x 75 feet, as recently noted in these columns, as well as smaller units. Work is reported to cost in excess of $150,000, instead of smaller amount, previously mentioned. Erection contract will be carried out by the Wark Company, 1700 Sansom street, Philadelphia, Pa. The Ballinger Company, 105 South Twelfth street, Philadelphia, is architect and engineer.

SO you think you might be cramped for space in a rush-hour subway car? Well, maybe, but compared to the fit of a modern bearing, you've got more than plenty of room.

.002 of an inch clearance is all the bearings get in many of today's precision machines. And that's enough for cool comfort . . . as long as the lubrication is right.

Just a thin film of oil does the trick. But if that film fails . . . look out! It's got to be there *all the time*, at slow speeds, at high speeds, and particularly when there's a sudden increase in load.

Here at Shell we've studied oil for years. And we've spent a great deal of time and money developing lubricants that stay on the job and maintain that vital oil film.

Many of these lubricants have made machines run better, smoother, more dependably . . . in plants just like yours. If you're operating some bearings that need more attention more often than they should, the chances are your Shell lubrication man has the answer.

SHELL

SHELL *Industrial* LUBRICANTS

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending November 6, 1940

	High	Low	Last
A. P. W.	2	2	2
Armstrong Cork Co.	33¼	31	31¼
Celotex Corp.	7½	7	7
Celotex Corp., pf.	62⅜	61	62⅜
Certain-Teed Products Corp.	5¼	4¾	4¾
Certain-Teed Products Corp., pf.	32	29½	29½
Champion Paper & Fibre Co.	22½	22	22⅛
Champion Paper & Fibre Co., pf.	102	101	102
Congoleum-Nairn Co.	21½	19¾	21
Container Corp. of America	18	15¾	16¼
Continental-Diamond Fibre Co.	7⅞	7¼	7⅞
Crown-Zellerbach Co.	15¾	14⅞	14⅞
Crown-Zellerbach Co., pf.	88	88	88
Flintkote Co.	17¾	16¾	17
Robert Gair	3	2¾	2¾
Robert Gair, pf.	16¼	16	16¼
International Paper & Power	15⅞	14¼	14¼
International Paper & Power, pf.	63¾	60¼	61
Johns-Manville Corp.	67¼	63	63
Johns-Manville Corp., pf.	128	127	127
Kimberly Clark Corp.	....	....	....
MacAndrews & Forbes	....	....	....
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	30	29¼	29¾
Mead Corp.	9½	8¾	8¾
Mead Corp., pf.	67½	66½	66½
Paraffine Companies, Inc.	37¼	37¼	37¼
Paraffine Companies, Inc., pf.	102	102	102
Rayonier, Inc.	17	15½	15½
Rayonier, Inc., pf.	26	26	26
Ruberoid Co.	17¼	15½	15½
Scott Paper Co.	42¾	42	42¾
Scott Paper Co., pf.	113	112	112
Sutherland Paper Co.	23½	23	23½
Union Bag & Paper Corp.	12⅝	11⅝	11¾
United Paperboard Co.	3⅞	3⅜	3⅝
U. S. Gypsum Co.	76	68	68
U. S. Gypsum Co., pf.	174⅝	174⅝	174⅝

New York Curb Exchange

High, Low and Last for Week Ending November 6, 1940

	High	Low	Last
American Box Board Co.	4⅝	4½	4½
Brown Co., pf.	19	18	18
Great Northern Paper	41	40½	40½
Hummel-Ross Fibre Co.	6¾	6½	6½
National Container Corp.	11⅝	11	11¼
St. Regis Paper Co.	3	2⅝	2⅝
St. Regis Paper Co., pf.	72½	70	70
Taggart Corp.	3⅞	3⅝	3⅝

Great Lakes Profit Rises

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., November 4, 1940—A tenfold gain in net profit, before provision for income and excess profits taxes, is reported in Great Lakes Paper Company, for the eight months ending Aug. 31, 1940, as compared with the corresponding period of 1939.

In a letter to shareholders, W. Earl Rowe, president, points out, however, that profits for 1940 will be subject to a minimum tax by Dominion and Provincial governments of 35 per cent. Until the basis for standard profits of newsprint companies has been determined by the Minister of Finance for the purpose of the excess profits tax, it is not possible to estimate the necessary provision for taxes on 1940 earnings.

The president reports that a satisfactory agreement was reached with the Ontario Department of Lands and Forests with regard to timber concessions. A new agreement, dated March 14, 1940, gives the company a 21-year lease, with provision for renewal for another 21-year period, of timber areas considered adequate for the future operation of the mill. The location, type, quality and quantity, of timber now held, as well as rates of dues and bonuses, are substantially more favorable to the company than those held under the annual licenses and agreements formerly governing the company's supply of raw material.

Plants at Fort William have been maintained in a high state of operating efficiency. Capital expenditures recently made have further increased mill efficiency and given a substantial reduction in costs. The program includes the installation of bark pressing equipment and changes in the boiler house to utilize the fuel value of bark waste. Improvements were made in the sulphite mill to increase pulp yield from cooking operations and improve quality. Capacity of the newsprint warehouse has been increased 50 per cent, permitting further reduction in transportation costs by making available an increased volume of newsprint tonnage for water shipment. Manufacturing costs for newsprint this year have been substantially below a comparative period for 1939, in spite of the higher cost of labor, materials and supplies.

The company exports its entire output, which adds approximately six million dollars to Canada's foreign exchange purchasing power.

Johns-Manville Earnings Up

Net sales of Johns-Manville and subsidiary companies for the third quarter of 1940 were $16,408,849, representing a 13.4 per cent increase over sales for the corresponding period last year, Lewis H. Brown, president, reported on October 22, following a meeting of the Board of directors held in the company's factory at Manville, N. J. Sales for the third quarter of 1939 were $14,474,596, he said.

Consolidated earnings for the third quarter this year amounted to $1,645,567, compared to a profit of $1,472,255 for the third quarter of 1939. Earnings per share of common stock, after preferred dividends, were $1.80 for the third quarter of 1940 as compared to $1.58 per share for the corresponding period last year.

Johns-Manville Credit Corporation, a wholly owned subsidiary, which purchases home modernization notes from contractors and building material dealers with repayment by home owners under the J-M "Million-Dollar-to-Lend" Plan, reported net earnings of $28,995 during the third quarter of this year as compared with $15,816 during the corresponding period of 1939.

International Plans Bond Issue

The way was cleared for a revival of plans for a large bond issue by the International Paper Company when the Public Service Commission authorized the Hudson River Paper Corporation to issue $8,000,000 of first mortgage 3½ per cent bonds and $6,455,000 of second mortgage 4 per cent bonds at prices to yield $14,535,000. Early in the summer International Paper filed a registration statement under the securities act covering $32,000,000 of bonds, but offering was deferred pending authorization of the Hudson River Power issues.

The major scheme of financing now hinges on approval by the Securities and Exchange Commission

under the public utility holding company act. A hearing on the subject will be held in Washington tomorrow morning.

The funds realized from the sale of these bonds will be applied toward the redemption by January 1 of first and refunding mortgage 5 per cent bonds of International Paper Company, which were assumed by Hudson River Power, outstanding to the amount of $14,135,000. The commission's order stipulates that the Hudson River bonds shall be sold not later than November 15, the first mortgage at not less than 101 and the second mortgage at not less than par. The second mortgage bonds are to be purchased by International Paper.

In the commission's order it is stipulated further that as long as any of the 3½ per cent bonds are outstanding the Hudson River company shall make no payments upon the second mortgage bonds, subject to certain qualifications.

All the stock of Hudson River Power is owned by International Hydro Electric System, an affiliate of International Paper and Power Company.

Scott Nets $1.64 a Share

The Scott Paper Company, Chester, Pa., in a statement to shareholders issued by Thomas B. McCabe, president, announced that net earnings available for common shares for nine months ended September 28 were $1,096,598, equal to $1.64 a common share.

This compares with net earnings of $1,223,735, or $1.83 a share, on the same basis for the nine months ended September, 1939.

Mr. McCabe further announced that net sales for the period ended September 28, 1940, were the largest ever reported in the company's history, amounting to $15,100,005. This represents an increase of 11 per cent over net sales reported for the nine months ended September 30, 1939, or $13,607,852.

Oxford Nets $200,437

The Oxford Paper Company for the September quarter reports a net income of $200,437, equal, after preferred dividend requirements, to 19 cents a share on 380,270 common shares, against $156,371 or 7 cents a common share in September quarter of 1939. Nine months to September 30: Net income $637,571, compared with $383,918 net income last year.

Gair Earns $530,625

The Robert Gair Company, Inc., and United States subsidiaries report for the nine months to September 30, 1940, a profit of $530,625 after subsidiary preferred dividends but before interest on income notes. This compares with loss of $279,388 in the 1939 period.

G. Lagerloef to Represent Rayonier

Rayonier Inc. has opened a sales office in the American National Bank Building of Kalamazoo, Mich.

Mr. Gerell Lagerloef has been engaged to represent Rayonier Incorporated in the middle western territory and will have his headquarters in the Kalamazoo Office.

Don't let inferior packing sabotage your rods, valves, flanges and joints. Frequent shutdowns for replacements are a form of sabotage . . . the slowing of essential production. Safeguard against unnecessary interruptions by using the longest wearing packing you can find. Alert engineers will be interested to know that

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Empire State Section Discusses Starch

The Empire State Section of the Technical Association of the Pulp and Paper Industry held its regular meeting at the Hotel Syracuse, Syracuse, N. Y., on November 2.

During the afternoon a large percentage of those present attended the Syracuse-Georgetown football game. F. C. Goodwill presided at the meeting held in the evening. The treasurer's report was read and accepted. Chairman Goodwill then introduced J. P. Strasser of the Stein-Hall Co. as guest speaker of the evening. Mr. Strasser presented a paper on "Starch in Papermaking." An interesting and informative discussion followed Mr. Strasser's talk.

Among those present were: Carl Apelgren, W. E. Bailey, F. G. Barber, Mr. and Mrs. M. H. Bennett, R. Bingham, Harvey Cannon, C. Wells Clark, Evelyn Clukey, John A. Feola, Donald M. Ferguson, Erling Fladmark, F. C. Goodwill, Mr. and Mrs. J. D. Haskell, William D. Haskell, Mr. and Mrs. C. F. Haskins, W. O. Hisey, Frank Hoar, Mr. and Mrs. R. F. Huntley, E. C. Jahn, Victorine C. Lewis, C. E. Libby, Harry S. Meadowland, Mr. and Mrs. S. E. Mower, Adam V. Pollak, Laurence E. Russell, H. E. Smith, J. P. Strasser, E. L. Thompson and Robert W. Worden.

Paper Board Output Lower

Paper board production in the United States in September fell under the output in the same month last year, the second time this year that such a drop has occurred. At 402,548 tons, production during the month compared with 452,604 tons in August and 445,387 tons in September, 1939, according to the Department of Commerce.

New orders received during September amounted to 399,133 tons and unfilled orders at end of the month stood at 131,242 tons, compared with 131,890 tons at the end of August and 290,467 tons at the end of September, 1939. In September last year orders for paperboard reached the unprecedented total of 628,272 tons, exceeding the month's production by approximately 183,000 tons, so that unfilled orders rose 170,965 during that month.

In the first nine months of 1940, the paperboard industry turned out 3,851,035 tons of paperboard, which was 72.6 per cent of capacity. In the like period last year, production was 3,464,256 tons or 68.3 per cent of capacity, and in 1938, only 2,771,899 tons or 60.1 per cent of capacity was produced.

Paper Box Orders Show Increases

CHICAGO, Ill., November 4, 1940—Folding paper box orders showed marked evidence of recovery during October from their late summer dull period, the monthly report of the Folding Paper Box Association indicated last week.

The October increase over September was 16.9 per cent, lifting the total for the month to within 0.6 per cent of the 1939 month, when a brisk volume of orders was still being received as the result of the outbreak of war and the belief that further price increases were imminent.

The upturn in business, association officials said, was most pronounced in the East. Bookings in these districts gained substantially over both September and October of 1939.

Pacific to Erect Apartment House

Pacific Mills, Ltd., have awarded contract for the erection of a second large apartment house building at their pulp and paper plant at Ocean Falls, B. C. The building will be erected at a cost of approximately $150,000.

The company erected a similar apartment block earlier this year which also cost $150,000. Work on the new building is starting immediately.

Designed by Architect Ross A. Lort, 340 Burrard street, Vancouver, plans show a three-story and basement structure, 170 by 75 feet in size, with accommodation for 42 three-room suites, all modernly equipped. Foundations will be of concrete, with walls of wood frame and exterior of shingles and rustic boarding and roof of shingles. Heating will comprise an extension of the company's steam heating plant.

Each suite will have fir flooring, with linoleum in kitchens and halls, and tile flooring in bathrooms and showers. Individual refrigerators and electric ranges will be installed in every kitchen.

New Edition of "Employers' Digest"

The Wage and Hour Division has announced that the 40-hour week edition of the "Employers' Digest" is off the press. This pamphlet contains the latest information concerning the Wage and Hour Law, especially information pertaining to the change in the standard workweek which dropped from 42 to 40 hours on October 24.

The "Employers' Digest" outlines the requirements of the Fair Labor Standards Act in clear, concise fashion and contains helpful instructions on record keeping. It explains in detail how employers should calculate their employees' regular rates of pay on which overtime is based. This new edition includes, among other changes, an alphabetical listing of the eleven wage orders which have been issued to date.

A poster briefly outlining the requirements of the Act after October 24, 1940, is also available for posting in two sizes, 8 x 10½ and 14 x 22 inches.

The "Employers' Digest" and the poster can be obtained, free of charge, from any of the Wage and Hour Division field offices, or by writing to the Wage and Hour Division, U. S. Department of Labor, Washington, D. C.

Paper Stock Prices Off

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., November 4, 1940—The paper stock dealers who were heading toward better prices the early part of October, thereby placing them on a profitable basis, are very much disturbed over the sinking of prices this week, a drop of one dollar a ton on the majority of grades. For mixed papers a low level of 40 to 45 cents has been reached, corrugated board is bringing 60 to 75 cents and container manila is quoted at 45 to 50 cents.

For the entire line of hard white shavings and other book stock of better grades, mill prices remain unchanged, with a willingness on the part of the mill to take virtually all that is offered at existing prices —none too high the packers state—but with comparatively small volume of stock coming in.

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PAPER TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Henry J. Berger
EDITOR

Vol. 111 November 7, 1940 No. 19

COMING EVENTS IN PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

NEW EXCESS PROFITS TAX

It may be conceded that it is difficult to enact a tax measure which will prove to be not only reasonably clear but fairly equitable in its provisions. The newly enacted excess profits tax is defective in its clarity and faulty in its application. It would seem that our lawmakers, with the example of a former excess profits tax for their guidance, could frame a better taxation scheme than has been accomplished. On the whole, the latest attempt to tap corporate profits is a rather poor job. As such, its effect upon business is problematical.

In commenting on some possible effects on business conditions of the excess profits tax, the October 28 issue of *The Guaranty Survey*, published by the Guaranty Trust Company of New York, states in part: "Certainly the law is better in many respects than it seemed likely to be a short time ago. It offers corporations a choice between two methods of calculating excess profits without imposing a heavy arbitrary penalty on those electing one in preference to the other. While still complex in its provisions, it is considerably less so than in its earlier stages. It permits consolidated returns by affiliated companies under certain conditions, thereby conforming to economic realities and avoiding numerous dangers of unfair discrimination. Most important of all, perhaps, it allows corporations to retain control over the later use or disposal of defense plants privately built under the five-year amortization provisions, instead of giving the Government a power of veto over such use or disposal—a power that would have permitted virtual confiscation of the properties and that might have had unfortunate effects on the progress of the defense program."

In pointing out that the new levy is less heavy in its demands on business than the excess profits tax of the former world conflict, the comment goes on to say that "The new tax is also less severe in some ways than the combined war profits and excess profits tax measure that was in effect during the World War. The maximum rate of 50 per cent under the present law compared with one of 65 per cent under the earlier excess profits tax, based on the return on capital, and a rate of 80 per cent under the war profits tax, based on past earnings. The specific exemption of $5,000 under the new law compares with one of only $3,000 during the former conflict. At that time, moreover, the taxpaying corporations, instead of being given the option between the war profits tax and the excess profits tax, were required to pay the higher of the two."

In summarizing the less encouraging aspects of the new tax *The Guaranty Survey* continues: "The most striking difference between the present law and that of 1918, and the one that prevents a more direct comparison of the respective tax burdens imposed, is that the tax rates under the new law are graduated not according to rates of return on invested capital but according to the absolute amounts of excess earnings. In this respect, the present law seems clearly inferior to the earlier one. A progressive tax on corporate earnings, whether excess or not, with rates graduated on the basis of absolute amounts instead of rates of return on investment, is difficult to justify on either economic or equitable grounds. Such a tax tends to place the heaviest burdens on the larger corporations, rather than on the more prosperous. The proportion of earnings that a corporation can be made to pay in taxes without undue hardship is measured, not so much by the size of the company or the absolute amount of its net income, as by the rate of return that it succeeds in earning on its invested capital. Consequently, if progressive tax rates are applied to corporate incomes, they should be based on rates of return and not on absolute amounts."

In comparing the newly enacted excess profits tax with similar levies, the article asserts that "The real financial burden represented by a tax depends not alone upon its magnitude but upon its weight as a component part of the general tax structure. The new excess profits tax is superimposed on a normal corporation income tax with graduated rates running up to 24 per cent. With maximum tax rate of 50 per cent on excess profits, the total tax on the higher increments of income thus amounts to 74 per cent, which is higher than the maximum rate on excess profits during the world conflict and only moderately below the rate on war profits. The normal tax rates on corporate incomes in 1917 and 1918 were respectively, 6 and 12 per cent. On the other hand, it must be remembered that the very high tax rate on war profits in 1918, as measured by the excess over past earnings, was not merely the maximum rate under a graduated schedule but a flat rate applying to all such profits."

In concluding its analysis of the new tax the article declares that "The effect of the law as a whole on the fiscal position of the Government, while by no means inconsiderable, is not likely to be of primary importance. The yield of the new taxes is estimated at approximately half a billion dollars on the basis of this year's earnings and at perhaps twice that amount in subsequent years. Such sums would have represented a major and perhaps decisive factor in the Government's finances until the last decade, but they sink into a secondary comparison with the magnitude that the operations of the Treasury have now attained and the even higher levels that are virtually certain to be reached in the next few years.

"Furthermore, the staggering cost of defense must be met; and the alternative to higher taxes is a large further increase in Government deficits, a possibility whose dangerous features business men are among the first to recognize. In the interests of preparedness as well as of general economic welfare, it is to be hoped that the heavy financial burden which rearmament is certain to entail will be lightened to some extent by curtailment in other branches of public expenditure."

Forest Resources of Alabama

The latest report of the Forest Survey of the South is entitled "Forest Resources of North Central Alabama," by James W. Cruikshank. With Birmingham as its urban center, the district is one of the most highly industrialized areas of the South. The report shows that even in a locality generally thought of in terms of coal and iron, the forest dominates the scene, covering 61 per cent of the land surface. Such heavy use is made of timber that current cutting is considerably in excess of replacement through growth. The possibilities of increasing both the quantity and the value of the wood products, as well as the employment provided by the forest industries, are discussed.

Small-sized trees in great abundance are found within the survey unit, and with adequate fire protection and good forest management a large industrial opportunity could be realized. It is possible that the average growth per acre of 96 board feet could be increased to 200 board feet, according to the report. Copies of Forest Survey Release No. 50 may be had upon request to the Southern Forest Experiment Station, E. L. Dammon, director, New Orleans, La.

S. W. Corrugated Box Co. to Start Soon

FORT WORTH, Tex., November 4, 1940—The Southwest Corrugated Box Company will be ready to begin operations in its new $190,000 plant here about November 10.

The $90,000 building for the factory, covering 60,000 feet of floor space, is nearing completion at Eighth, Stanley and West Arlington Avenues. Machinery will cost $100,000.

The plant will employ 150 men and will have a capacity of from three to five carloads of corrugated paper daily.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

Months	1940	1939	1938	1937	1936	1935	1934
January	90.2%	77.5%	63.9%	90.3%	76.1%	65.8%	.....
February	86.2%	81.7%	68.7%	90.1%	77.9%	70.0%	.....
March	83.9%	84.0%	69.6%	90.3%	76.0%	70.5%	.....
April	86.3%	82.9%	68.3%	92.1%	82.3%	70.0%	.....
May	91.8%	80.2%	69.0%	90.6%	81.6%	69.4%	.....
June	93.8%	79.7%	66.0%	87.3%	80.7%	72.3%	.....
July	87.1%	75.2%	72.0%	81.8%	77.3%	64.9%	.....
August	87.3%	82.9%	77.2%	82.9%	81.5%	70.9%	.....
September	83.3%	88.7%	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	96.6%	82.5%	73.5%	87.6%	75.6%	64.7%
November	.....	97.2%	79.6%	61.9%	88.0%	75.3%	61.7%
December	.....	91.1%	74.4%	54.5%	85.9%	71.2%	59.6%
Year Average	.....	84.9%	72.3%	80.6%	81.3%	70.5%	.....
First 43 weeks	88.0%	82.9%	71.3%	85.6%	80.2%	70.0%	.....

COMPARATIVE WEEKLY SUMMARIES[1]

CURRENT WEEKS, 1940		CORRESPONDING WEEKS, 1939	
September 21	87.1%	September 23	93.4%
September 28	89.3%	September 30	95.7%
October 5	87.9%	October 7	93.0%
October 12	89.0%	October 14	96.9%
October 19	87.6%	October 21	98.6%
*October 26	89.6%	October 28	97.9%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting—Current Weeks					
Ratio Limits	Sept. 21, 1940	Sept. 28, 1940	Oct. 5, 1940	Oct. 12, 1940	Oct. 19, 1940	Oct. 26, 1940
0% to 50%	51	44	47	47	49	36
51% to 100%	248	251	243	237	225	215
Total Mills Reporting	299	295	290	284	274	251

PAPERBOARD OPERATING RATIOS

Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1936	62%	67%	67%	70%	69%	70%	69%
1937	80%	86%	86%	88%	85%	77%	66%
1938	54%	60%	61%	57%	58%	56%	57%
1939	60%	67%	71%	69%	64%	67%	63%
1940	71%	70%	69%	70%	76%	79%	72%

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	75%	78%	82%	80%	74%	72%
1937	74%	69%	65%	55%	45%	73%
1938	66%	66%	70%	65%	59%	61%
1939	72%	74%	84%	81%	71%	70%
1940	74%	72%	....	....	....	....

Week end. Sept. 21, 1940—74%
Week end. Sept. 28, 1940—78%
Week end. Oct. 5, 1940—78%
Week end. Oct. 12, 1940—79%
Week end. Oct. 19, 1940—78%
Week end. Oct. 26, 1940—80%

[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted periodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.
* Preliminary figure.

Dexter Sulphite Co. Busy

DEXTER, N. Y., November 4, 1940—Announcement is made here that the Dexter Sulphite, Pulp and Paper Company is operating at full capacity with a number of orders booked ahead. The paper mill unit is producing waxed, greaseproof and other wrapping papers while the sulphite plant is turning out about 2,200 tons of high grade sulphite every month. During the summer months a pulp wood supply has been accumulated for the coming winter, the timber being brought up the St. Lawrence river in freighters to the terminal at Cape Vincent from where it was trucked to the mill here. A number of more cargoes are expected this month which will make the reserve sufficient to supply the needs of the company until the opening of the navigation season next spring. It is said that there is a shortage of woodsmen and lumberjacks and the next few weeks is likely to see an increasing price paid by paper manufacturers for the Canadian product.

THE SOUND OF HAMMERS THROUGHOUT THE LAND

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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Preparation of Desulphonated Lignin from Calcium Lignosulphonate*

By Irwin A. Pearl[1] and H. K. Benson[2]

Abstract

A study of the desulphonation of calcium lignosulphonate by treatment with sodium hydroxide has been made with the following ends in view: to prepare a lignin material free from sulphur for hydrogenation, chlorination, and similar studies; to study the sulphonic acid linkage in the lignosulphonic acid molecule; and to prepare from sulphite waste liquor a tractable and reactive material for lignin research.

The effects of time and temperature on the desulphonation of calcium lignosulphonate keeping constant the concentration of alkali and alkali-calcium lignosulphonate ratio were studied. It was found that much of the sulphur remaining in the final products of these experiments could easily be removed by electrodialysis. A temperature of 175-180 deg. C. for about two hours appeared to be the optimum conditions for desulphonation of calcium lignosulphonate by sodium hydroxide in a concentration of 35 to 40% and an alkali-calcium lignosulphonate ratio of one to one.

Because of its similarity to isolated lignins, the product obtained by desulphonation of calcium lignosulphonate has been called desulphonated lignin.

The preparation of lignin has been the subject of research for many years. A great variety of lignin preparations have been obtained by treatment with chemical reagents and solvents. The name *lignin* has been given to all these diverse products, but, in each case, has been qualified by some prefix, e.g., hydrochloric acid lignin, phenol lignin, butanol lignin, alkali lignin, native lignin, etc.

In the manufacture of sulphite pulp, the wood is digested with a solution of calcium bisulphite and free sulphurous acid. As a result of this treatment, the lignin of the wood is transformed into the water-soluble calcium salts of lignosulphonic acids, and as such, is discharged from the pulp mills in the so-called sulphite waste liquor. The calcium lignosulphonate of waste liquor is often designated as lignin, but it is obvious that the properties of calcium lignosulphonate and of lignin are not synonymous. Calcium lignosulphonate is extremely soluble in water, whereas insolubility in water is a property common to all the lignins cited above. The same distinction holds with reference to ash and sulphur content. Moreover, the chemical reactivity with reference to nitration and chlorination is limited in comparison with the ease of these reactions on isolated lignins.

In preliminary studies on the utilization of sulphite waste liquor Carpenter and Benson *(1)* and Pedersen and Benson *(2)* found that whereas isolated calcium lignosulphonate could not be nitrated or chlorinated to any degree, partial desulphonation of the sulphonate with strong alkali yielded a product which readily formed nitro and chloro derivatives.

These observations led to the study reported here on the preparation of desulphonated lignin from calcium lignosulphonate by desulphonation with sodium hydroxide under conditions less drastic than fusion. Inasmuch as this desulphonated product reacts similar to and resembles lignin, it would seem fitting to regard this product as *desulphonated lignin*, and always refer to the calcium lignosulphonate as such. Accordingly we will refer to the product obtained by treatment of calcium lignosulphonate by alkali in these experiments as *desulphonated lignin*.

The treatment of calcium lignosulphonate with sodium hydroxide involves four factors—i.e., temperature, time, concentration of alkali, and ratio of alkali to calcium lignosulphonate. In this paper we have studied the effects of time and temperature on the desulphonation of calcium lignosulphonate keeping constant the concentration of alkali and the alkali-calcium lignosulphonate ratio.

This study was undertaken with the following ends in view: to obtain a reactive, tractable lignin preparation free from sulphur for further lignin research experiments such as chlorination, nitration, hydrogenation, etc.; to obtain more information on the sulphonic acid linkage in lignosulphonic acid.

Historical

Many investigators have fused lignosulphonic acids with alkali. In 1918 Melander *(3)* fused lignosulphonic acids obtained from sulphite waste liquor by salting out with sodium chloride. Under various conditions he obtained yields of vanillic acid, protocatechuic acid, and catachol together with acetic acid and small quantities of higher fatty acids.

* Presented at the Fall Meeting of the Technical Association of the Pulp and Paper Industry, Olympic Hotel, Seattle, Wash., Aug. 20-23, 1940.

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Hönig and Fuchs *(4)* studied the potash fusion of the lignosulphonic acids precipitated with alcohol from sulphite waste liquor as the barium salts according to Hönig and Spitzer *(5)*. These authors carried out a series of experiments to determine at what temperature a complete cleavage of sulphur from the organic compound could be obtained. Two grams of barium lignosulphonate were heated with eight grams of solid potash and eight grams of water at a series of temperatures for 10 minutes. The melts were taken up in water and acidified. The precipitates (amounting to about one third of the starting material) were filtered off and, neglecting the precipitates, the total sulphur was determined in the filtrates. Their results giving the sulphur cleavage as per cent total sulphur are given in the following: 136-140 deg. C., 3%; 160-170 deg. C., 35%; 200 deg. C., 59%; 240-250 deg. C., 70%; 300 deg. C., 90%. From these experiments they concluded that to effect complete cleavage of sulphur from the lignin molecule, a temperature of over 300 deg. C. was necessary.

More recently *(6-14)* lignosulphonic acids have been treated with more dilute solutions of sodium hydroxide to yield varying quantities of vanillin.

Friedman and co-workers *(15)* have subjected lignosulphonic acids to caustic fusion in attempts to obtain larger yields of catechol, etc.

Because a number of fractions can be precipitated from sulphite waste liquor, it has been generally conceded that the liquor contains more than one sulphonic acid. Tomlinson and Hibbert *(11)* in reviewing the literature have shown that the chance of a stochiometric relationship between sulphur and lignin is quite remote for any particular fraction. The sulphur content of the isolated lignosulphonic acid depends on the time and temperature of the sulphite cook *(16)*, a product having high sulphur content being obtained on prolonged heating. Lignosulphonic acids or their salts have been reported having sulphur contents ranging from 4 *(17)* to 12.8% *(18)*. Thus, any fraction obtained from a waste liquor arising from some arbitrary cooking condition, is likely to contain more than one calcium lignosulphonate.

Calcium Lignosulphonate

The sulphite waste liquor used in these experiments was of hemlock origin, and was kindly furnished by the Puget Sound Pulp and Timber Company of Bellingham, Washington.

Calcium lignosulphonate was obtained from the sulphite waste liquor by the method of Moore *(19)*, similar to the commercial Howard process. The liquor was slowly treated with calcium oxide with constant stirring until a pH of 10.5 was reached. At this point most of the inorganic material and some of the calcium lignosulphonate precipitated. The mixture was filtered and the precipitate discarded. Calcium lignosulphonate was then fractionally precipitated from the filtrate by alcohol. The first and largest precipitated sulphonate was redissolved in water and subjected to further purification by adding a small amount of lime and repeating the filtration and precipitation with alcohol. At this stage the calcium lignosulphonate was free from all inorganic material as determined by microscopic examination through crossed Nicols *(20)*. This purified calcium lignosulphonate was used in all the following experiments. It had the following analysis: ash, 9.76%; sulphur, 6.69%; methoxyl, 9.27%.

How to Obtain Lignin

All desulphonations were carried out in the same manner. Fifteen grams of finely pulverized calcium lignosulphonate was added gradually with stirring into 25 grams of water in a 150 cc. iron crucible. Fifteen grams of solid sodium hydroxide was then stirred into the thick syrup, and the mass vigorously stirred for a few minutes. After sealing, the crucible was then placed in an oil bath at the prescribed temperature for a definite time. At the end of the reaction time the crucible was removed from the oil bath and allowed to cool.

The crucible contents were then dissolved in water (100% soluble), and the solution acidified with hydrochloric acid until just slightly acid. The light flocculent precipitate was allowed to settle, and the mixture was decanted through a Buchner funnel. The precipitate was stirred with distilled water and then centrifuged. Decantation, filtration, stirring with distilled water was repeated, and the product was finally filtered onto a Buchner funnel and well washed with distilled water. The thoroughly washed precipitate was then airdried at 80 deg. C.

Results of desulphonation experiments at four different temperatures keeping constant the concentration of alkali and calcium lignosulphonate-alkali ratio is given in Table I.

TABLE I.

Time hr.	Ash %	Methoxyl %	Methoxyl (ash-free) %	Sulphur %	Yield* %
(Oil Bath at 125 to 130 deg. C.)					
¼	6.33	11.95	12.8	2.24	25
½	2.18	14.05	14.3	1.22	33
1	3.36	13.91	14.4	1.19	31
2	5.96	11.21	11.9	1.59	39
3	10.05	11.26	12.5	2.05	17
4	10.20	12.08	13.5	2.08	51
5	8.05	10.80	11.8	1.43	38
(Oil Bath at 150 to 160 deg. C.)					
¼	3.75	13.36	13.9	1.27	18
½	4.94	12.48	13.1	1.23	40
1	3.25	13.64	14.1	0.93	27
4	7.72	10.11	11.0	1.44	29
(Oil Bath at 175 to 180 deg. C.)					
¼	3.08	14.31	14.8	1.14	29
½	4.44	12.68	13.2	1.23	43
1	4.74	12.75	13.4	0.94	41
2	0.67	13.98	14.1	0.19	37
(Oil Bath at 200 to 210 deg. C.)					
¼	1.31	13.61	13.8	0.88	39
½	3.03	12.74	13.1	1.04	35
1	1.60	12.94	13.2	0.56	43

* Yields are based on the weight of the starting material and are calculated from the weight of the ash-containing product.

From Table I it can be seen that the sulphur values found by analysis, as such, could not be correlated with either time or temperature. However, from the data, it was observed that a high sulphur value was always accompanied by a high ash content. This fact, together with the fact that a partially desulphonated product obtained by Lang and Bailey *(21)* did not poison the catalyst in some hydrogenation experiments, led us to believe that at least a part of the remaining sulphur might be in the form of occluded inorganic sulphur. Therefore a separate experiment was performed under the same conditions, and half of the thoroughly washed desulphonated lignin was subjected to electrodialysis for a period of 10 days. Both the original and the electrodialyzed desulphonated lignin were dried, powdered, and analyzed. Results are given in Table II.

TABLE II.

	Ash	Sulphur
Original Desulphonated Lignin, %.....	6.97	1.16
Electrodialyzed Desulphonated Lignin, %	0.47	0.15
Difference, %.....	6.50	1.01

Because all the experiments were carried out in the same manner it was then logical to assume that the ash compositions of the various desulphonations would probably be similar. Accordingly, we made the assumption that the ash of each desulphonation contained occluded, dialyzable sulphur to the extent of 1.01% for each 6.50% of ash. The sulphur values in Table I were then corrected for occluded sulphur in the ash. These corrected values are given in Table III.

TABLE III.

Time hrs.	Sulphur (ash-corr.) %	Sulphur Cleavage (% original sulphur) %
(Oil Bath at 125 to 130 deg. C.)		
¼	1.26	81.2
½	0.88	86.9
1	0.67	90.0
2	0.56	91.6
3	0.49	92.7
4	0.49	92.7
5	0.18	97.3
(Oil Bath at 150 to 160 deg. C.)		
¼	0.69	89.7
½	0.46	93.1
1	0.42	93.7
4	0.24	96.3
(Oil Bath at 175 to 180 deg. C.)		
¼	0.66	90.1
½	0.54	91.9
1	0.20	97.0
2	0.09	98.7
(Oil Bath at 200 to 210 deg. C.)		
¼	0.68	89.9
½	0.57	91.5
1	0.31	95.4

Now the sulphur values can easily be correlated with temperature and time. The results are shown graphically in Fig. 1. It must be remembered that these values are only approximate and are based entirely on the assumption that the composition of the ashes of all the desulphonation experiments are of the same composition.

Conclusions

From the data of Tables I and III it is evident that for a calcium lignosulphonate-sodium hydroxide ratio of 1:1 and an alkali concentration of 35 to 40%, the greatest cleavage of sulphur from calcium lignosulphonate takes place at 175 to 180 deg. C. for a period of about two hours.

These data do not conform with the results of Hönig and Fuchs *(4)*, but the difference in alkali, metal of salt, and concentration of alkali might account for the discrepancy. However, they do indicate that the desulphonation is sufficiently complete to yield from the waste liquor of sulphite pulping a lignin comparable to other lignins.

Further work on desulphonated lignin is being carried on. We have obtained lignin preparations by desulphonating calcium lignosulphonate with lime under varying conditions of concentration, temperature, and pressure, including atmospheric pressure. This study is being completed. Studies on effects of concentration and alkali-calcium lignosulphonate ratio on desulphonation of calcium lignosulphonate, and properties and reactions of desulphonated lignin are in progress.

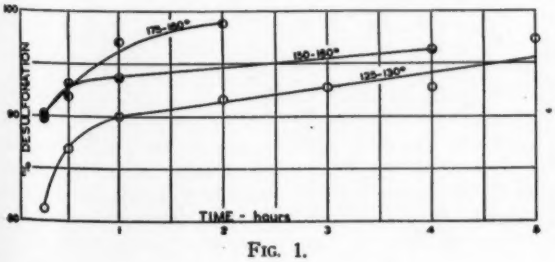

FIG. 1.

Literature Cited

(1) Carpenter and Benson, to be published.
(2) Pedersen and Benson, *Pacific Pulp Paper Ind.*, 14 no. 8:14, 48 (Aug., 1940).
(3) Melander, *Teknisk Tidskr.*, no. 10-12 (1918).
(4) Hönig and Fuchs, *Monatsh.*, 40, 341 (1919).
(5) Hönig and Spitzer, *Monatsh.* 39, 443 (1918).
(6) Kürschner, J., *Prakt. Chem.*, 118, 238 (1925).
(7) Hönig and Ruziczka, *Z. angew. Chem.*, 44, 845 (1931).
(8) Kürschner and Shramek, *Tech. Chem. Papier-Zellstoff.-Fabr.*, 28, 65 (1931) and 29, 35 (1932).
(9) Kürschner, *Tech. Chem. Papier-Zellstoff-Fabr.*, 30, 1 (1933).
(10) Shoruigin and Smolyaninova, *J. Gen. Chem.*, (U.S.S.R), 4, 1428, (1934).
(11) Tomlinson and Hibbert, *J. Am. Chem. Soc.*, 58, 348, (1936).
(12) Alvfeldt and Hägglund, *Svensk Pappers-Tid*, 40, 236 (1937).
(13) Hibbert and Tomlinson, U. S. patent 2,069,185 (1937).
(14) Freudenberg, Lautsch, and Engler, *Ber.*, 73B, 167 (1940).
(15) Friedman and co-workers, Paper given before the Chemistry Section of the American Association for the Advancement of Science meeting in Seattle, Wash., June, 1940.
(16) Hägglund, *Biochem. Z.*, 158, 350 (1925).
(17) Freudenberg and Sohns, *Ber.*, 66B, 262 (1933).
(18) Klason, *Ber.*, 58, 1761 (1925).
(19) Moore, P. J., "The Precipitation of Colloidal Matter in Sulphite Waste Liquor by Electrolytes", thesis, Seattle, University of Washington (1936).
(20) Pearl and Benson, Unpublished results on microscopic examination of calcium lignosulphonate.
(21) Bailey and Lang, Unpublished work.

"Living Lithography" to Continue

Although the national exhibition of lithography which has been presented throughout the entire month of October by the Philadelphia Art Alliance in collaboration with the Lithographers National Association, will be dismantled on October 31, numerous developments resulting from the widespread interest which this show has created, assure not only that "Living Lithography" will not die but also that its message will be circulated to the widest possible audience throughout the entire United States.

These plans include: an itinerant "Living Lithography" exhibit sponsored by the American Institute of Graphic Arts; a color motion picture recording the entire story of the show, which is being prepared by the Graphic Arts Division of the Eastman Kodak Company; a booklet on Lithography, consisting of addresses made at the all-day Printing and Advertising Clinic held on October 17 in Philadelphia, sponsored by General Printing Ink Corporation. Other developments include a sequence in a black-and-white motion picture on Lithography now in the process of production by the Harris-Seybold-Potter Company; and a souvenir, illustrated booklet telling the story of the show and the lithographic industry.

As the various items are completed, they will be announced in detail.

Russia's Pulp Capacity 1,370,000 Tons

WASHINGTON, D. C., November 6, 1940—Capacity of wood pulp mills in Soviet Russia now reaches 1,370,000 metric tons, according to recent trade estimates in a report from the American Consulate General, Stockholm. The peace treaty with Finland added 370,000 tons of chemical and 14,000 tons of mechanical pulp, and annexation of the Baltic States brought in an additional 161,000 tons of the former and 25,000 tons of the latter.

Comparative Evaluation of the Different Methods of Dirt Count of Pulp*

By Alan P. Adrian[1] and John H. Graff[2]

Abstract

The value of a pulp depends to a large extent upon the relative number and the area of dirt specks or foreign materials present in the pulp; therefore, it is of importance that the method used for determining these dirt specks be standardized in such a manner that the dirt count made by the producer and by the buyer of the pulp is comparable.

The problem suggests two methods of approach: a laboratory method where the total number of specks per gram of pulp and accurate micrometric measurements and qualitative analyses of the specks are made, and a mill method for checking the dirt count during the manufacturing operation. Both methods to be reproducible must use speck counting boxes with transmitted illumination, and the type of light and the distance of the lights from the sheet, as well as the height of the eye point above the sheet, must be standardized. The reports must be made in such a manner that information is obtained about the relative number of specks in a given unit weight of pulp, the frequency distributions of the average square areas, and kind of specks present, so that the nature and source of the most objectionable specks can be determined.

* Presented at the Fall Meeting of the Technical Association of the Pulp and Paper Industry, Olympic Hotel, Seattle, Wash., Aug. 20-23, 1940.

A portion of a thesis submitted in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Master of Science from Lawrence College, Appleton, Wis., June, 1940.

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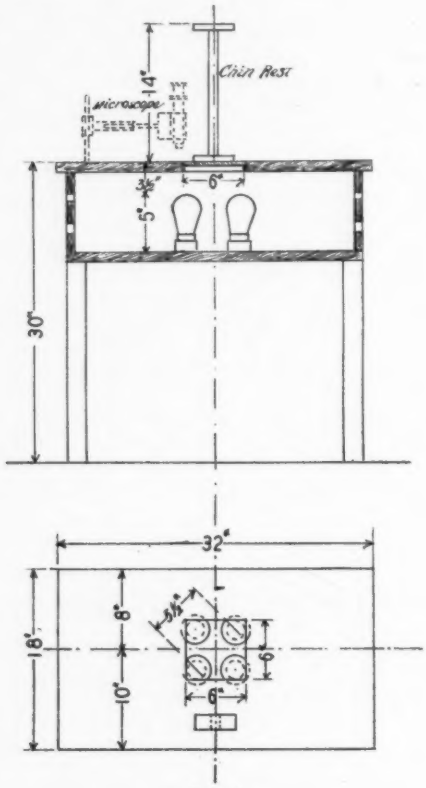


FIG. 1
Laboratory Speck Count Box

One of the factors which determines the relative value of a pulp is the amount of dirt or foreign material present in the pulp, which can be determined by the so-called speck count. However, a standard reproducible method as free as possible from errors and variations has not been agreed upon, and large variations in the speck counts made by the producer and those made by the purchaser of a given pulp often occur.

Although there are many references in the literature to the analysis of specks and dirt in pulp and paper, there are only a few methods mentioned for systematically obtaining a dirt count of pulp. These are (1) the Clark method, now a TAPPI tentative method; (2) the Graff methods for handsheets and drier sheets, respectively; and (3) the method of Simmonds, Billington, and Baird.

The problem lends itself to two methods of approach: a laboratory method by which, as far as possible, the exact number, area, and kinds of specks per gram of pulp can be determined; and a method which can be used as a continual check during the manufacturing operation. If this latter method also gave an idea of the relative area and kind of specks present, it would be a much better method.

Laboratory Control Method

In developing a laboratory method which is reproducible and as free as possible from experimental and personal errors, the following points should be considered: the method of preparing the handsheets, such as sampling, disintegration, basis weight, and pressing of the sheets; the type of light box used, including type of illumination, distance of illumination from the sheets, and the height of the eye point above the sheet; the number of sheets to be counted for the least possible probable error in proportion to the time used; the frequency distribution of the relative area in square millimeter of the specks; and the kind of specks predominant in each area.

Graff's Method

Approximately 50 grams of airdry pulp, or its equivalent of moist or wet stock, are placed in a two-gallon earthenware jar, previously rinsed with distilled water to which six liters of distilled water are added. The stirring blade of the disintegrator is lowered into the water and the top of the jar is covered with a clean wet cloth cut to accommodate the shaft of the disintegrator. The mixture is agitated for 20 minutes with a 1.75-inch blade at about 2000 r.p.m.

In preparing the sample sheets, the pulp suspension

is stirred with a glass rod and 150 cc. are transferred to a 5.5-inch Büchner funnel fitted with a felt previously rinsed with water. Eight sheets are prepared and placed one on top of the other separated by felts. The sheets are wrapped in clean white paper, pressed for two minutes in a one-ton press, and, still wrapped, transferred to the darkroom where the number of specks is counted in a light box, as shown in Fig. 1. This box is illuminated by four 50-watt lamps placed in a vertical position resting on the bottom of the box with the sockets 5.5 inches apart. The bulbs are of milky glass and are tipless. A ground-glass plate, smooth side up, is placed above the lights. A shield of heavy black paper, with a circular opening a little larger than the diameter of the sheet to be examined, is used to avoid the glare of the lights. A head or chin rest is used so that the eyes may always be a standard height above the sheets.

Each sheet in turn is placed over the ground-glass plate of the light box, and each visible particle of foreign material is encircled with an indelible pencil. The sheet is then turned over and any particles visible from the other side of the sheet are encircled in the same way, making a note on the sheet as to the total number of specks found. When each sheet of the set has been examined in this way, the set is transferred to a drying oven and allowed to remain for 35 minutes at 165 deg. F., whereupon the dry sheets are weighed to the nearest tenth of a gram. The total number of specks found in all eight sheets, divided by the weight of the set, equals the speck count per gram of pulp.

The variables in this method—time of stirring, basis weight, types of light, distance of light source, height of eye point, and number of sheets needed for minimum error—were checked one at a time, always employing the previously selected conditions in obtaining data on the factors investigated; eight speck sheets were used for each individual set of counts; a softwood unbleached sulphite pulp was used throughout the work.

Time and Speed of Stirring

Continued stirring beyond complete disintegration of the pulp does not affect the average number or areas of the specks to any great extent; the type of stirrer used also has no effect.

Basis Weight

As the sheet became thicker it transmitted less light and therefore the particles counted decreased. From the data in Table I, it appears that, at the lower limits of basis weight, the counts approach a constant value, and, as a sheet of 31 pounds (24x36—500) is too thin to handle and a sheet of 37 pounds gives the same count and may be handled conveniently, this was taken as the standard basis weight of the sheets.

TABLE I.—EFFECT OF BASIS WEIGHT ON DIRT COUNT

Basis Weight	Dirt Count per Moisture-Free Pulp 1	2	3	4	Average
31	54.9	54.5	55.0	52.0	54.1
37	52.0	52.5	55.8	56.0	54.0
47	55.0	48.0	52.0	50.5	51.4
74	48.2	48.8	...	...	...

Type of Light

For the investigation of the influence of the color of the light used, squares of blue, pink, and red cellophane were successively placed under the ground-glass plate, using 50-watt white bulbs and 60-watt daylight bulbs without cellophane. Two counts of eight sheets were made in each case. The results are shown in Table II. Because the daylight bulbs and ordinary light bulbs with pink or blue cellophane increase the dirt count, the 60-watt daylight bulb was selected as a standard.

TABLE II.—INFLUENCE OF TYPE AND COLOR OF LIGHT ON DIRT COUNT

Type of Light	Dirt Count per Gram of Moisture-Free Pulp 1	2	Average
Four 50-watt White	51.2	54.9	53.0
Pink Cellophane	57.8	54.5	56.1
Red Cellophane	40.3	38.6	39.4
Blue Cellophane	60.5	58.9	59.7
Four 60-watt Daylight	58.6	60.5	59.5

Distance of the Light Source from the Sheets

With the basis weight of the sheets and the best type of lights to be used having been determined, it was next necessary to determine the distance from the top of the light bulbs to the underside of the glass. These results are shown in Table III and show that the dirt count increases as the distance of the light source decreases but levels off after a certain distance is reached.

TABLE III.—INFLUENCE OF DISTANCE OF LIGHT SOURCE ON DIRT COUNT

Distance of Light Source in Inches	Dirt Count per Gram of Moisture-Free Pulp 1	2	Average
3.5	58.6	60.5	59.5
6.0	61.8	58.8	59.8
12.0	48.2	48.2	48.2
18.0	43.0	41.7	42.3

Height of Eye Point and Number of Sheets

Next, the height of the eye point above the speck sheet was standardized. To ascertain the influence of this distance upon the number of specks counted, the number of sheets necessary for a reasonably small probable error was determined and the frequency distribution of the areas in square millimeter of the specks was counted at different heights of the eye point.

To do this the individual speck count per gram of moisture-free pulp was determined for 48 sheets at three different heights of the chin rest: 14, 9, and 5 inches. After determining the speck count per gram of pulp for each sheet, eight of these were averaged

TABLE IV.—INFLUENCES OF THE HEIGHT OF THE CHIN REST

5-inch Level				9-inch Level				14-inch Level			
Dirt Count per g. of Pulp *	S.D.	δ	δ²	Dirt Count per g. of Pulp *	S.D.	δ	δ²	Dirt Count per g. of Pulp *	S.D.	δ	δ²
111.00	10.30	0.14	0.02	75.70	7.64	0.92	0.85	59.10	7.26	1.04	1.08
107.50	12.70	2.54	6.50	72.80	11.85	3.29	10.80	61.60	5.87	0.35	0.12
108.00	9.24	0.92	0.85	76.40	10.00	1.44	2.10	62.00	4.70	1.52	2.32
113.00	10.00	0.16	0.03	69.80	6.60	1.96	3.85	62.20	6.13	0.09	0.01
108.70	11.40	1.24	1.55	75.00	9.15	0.59	0.35	61.00	7.72	1.50	2.25
103.30	7.32	2.84	8.10	76.50	6.14	2.42	5.90	61.90	5.65	0.57	0.33
Ave. 108.6	10.16			74.40	8.56			61.30	6.22		
Σ δ²			17.05				23.85				6.11
	S.D. of S.D. = 1.84				S.D. of S.D. = 2.18				S.D. of S.D. = 1.10		

* Pulp weight was determined on moisture-free basis.

to give the dirt count of the pulp. The standard deviation (S.D.) for each average dirt count of eight sheets was determined, as was also the standard deviation of the average count of the 48 sheets. In each case the standard deviation was obtained by the equation

$$\text{S.D.} = \sqrt{\Sigma \delta^2/(N-1)}. \qquad (1)$$

Having determined the standard deviation of the standard deviation of six sets of eight sheets each, the probable error (P.E.) of a dirt count for any number of sheets can be determined by the equation

$$\text{P.E.} = (0.6745\ \text{S.D.})/\sqrt{N}. \qquad (2)$$

Table IV shows the average dirt counts of the six sets of eight sheets for each level of the chin rest, together with the standard deviation for each set and the standard deviation of the standard deviation at each level. Table V shows the probable error and percentage error for 8, 16, and 24 sheets at each level. The results in Table IV show that the speck count decreases as the eye point increases above the sheet, and Table V shows that the probable error also decreases with the increase of the distance, and that little is gained by using more than eight sheets for an average count. This is also shown in Fig. 2.

TABLE V.—INFLUENCE OF NUMBER OF SHEETS ON PROBABLE ERROR

Number of Sheets	5-inch Level Dirt Count 109.0 S.D. 10.2		9-inch Level Dirt Count 74.5 S.D. 8.75		14-inch Level Dirt Count 61.7 S.D. 6.4	
	P.E. ±	% ±	P.E. ±	% ±	P.E. ±	% ±
8	2.46	2.23	2.11	2.82	1.54	2.48
16	1.74	1.59	1.50	2.01	1.09	1.77
24	1.43	1.30	1.21	1.63	0.89	1.43

To determine the frequency distribution of the square areas of the specks at each level, the long and the short diameters of from 105 to 200 specks were determined micrometrically and arranged as shown in Table VI; from these data, frequency curves were drawn, as shown in Fig. 6. The data in Table IV show that the speck count decreases with the increase of the height of the eye point or chin rest, but, as is shown in Fig. 3, the square area of the specks counted increases with the height of the eye point and, as the larger specks in pulp are more important than the almost invisible specks, the 14-inch chin rest was adopted as the most suitable height.

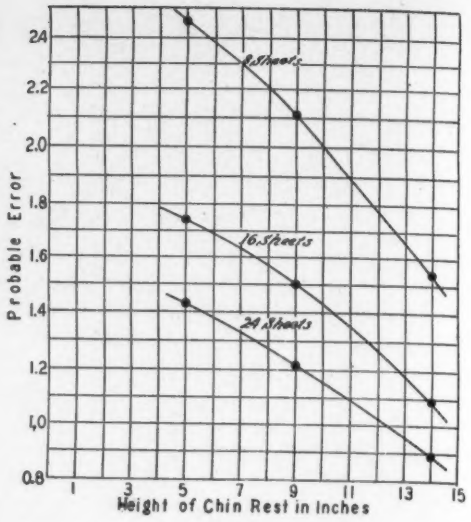


FIG. 2
Probable Errors of Speck Counts in Relation to Height of Chin Rest

As the square area of the specks was determined, the specks for one of the sets were analyzed and arranged, as shown in Table VII, from which it can be seen that the inner bark and the shives constitute the major portion as well as the largest and most objectionable specks in this pulp *(1)*.

Simmonds, Billington and Baird Method *(2)*

A light box similar to the one used in Graff's method is used, with the exception that the ground-glass plate is 8 by 10 inches and ruled into one-inch squares mentally numbered from one to 80, and a wide field microscope, giving a 10-diameter magnification and fitted with an eyepiece micrometer, is used for determining the long axis of the specks.

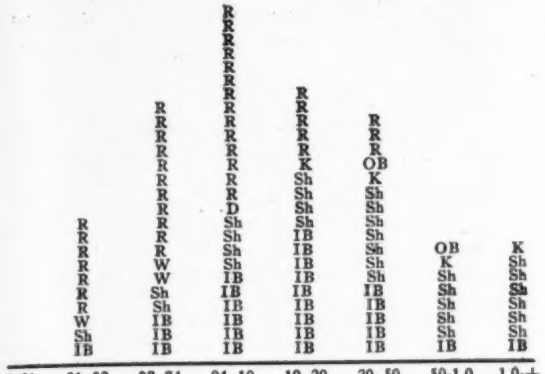
Four 5 by 7-inch sheets, having a basis weight of 45 to 55 pounds (24x36—500), are placed on the upper left-hand corner of the illuminated ground glass. The particles observed in areas corresponding to 1, 16, 24, 32, and 46 of the ground glass are counted and measured. No mention is made as to whether a wet or dry sheet is used. The measure-

TABLE VI.—AREA FREQUENCY DISTRIBUTION OF SPECKS COUNTED AT VARIOUS EYE LEVELS

Range (mm.²)	14-inch Level 198 Specks		14-inch Level 105 Specks		9-inch Level 200 Specks		5-inch Level 200 Specks		Clark's Estimation 200 Specks	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
0.00-0.01	4	2.02	0	0.00	19	9.50	38	19.00	11	5.50
0.01-0.02	21	10.60	10	9.54	34	17.00	42	21.00	60	30.00
0.02-0.03	24	12.10	9	8.56	19	9 50	22	11.00	36	18.00
0.03-0.04	15	7.60	9	8.56	12	6.00	19	9.50	26	13.00
0.04-0.05	9	4.55	7	6.66	14	7.00	10	5.00	12	6.00
0.05-0.06	9	4.55	5	4.76	13	6.50	7	3.50	16	8.00
0.06-0.07	8	4.03	4	3.81	12	6.00	7	3.50	5	2.50
0.07-0.08	9	4.55	6	5.71	5	2.50	9	4.50	6	3.00
0.08-0.09	4	2.02	1	0.95	7	3.50	5	2.50	7	3.50
0.09-0.10	4	2.02	3	2.86	7	3.50	8	4.00	3	1.50
0.10-0.12	10	5.05	8	7.61	10	5.00	7	3.50	4	2.00
0.12-0.14	11	5.55	3	2.86	10	5.00	8	4.00	4	2.00
0.14-0.16	12	6.05	3	2.86	5	2.50	5	2.50	2	1.00
0.16-0.18	6	3.03	1	0.95	4	2.00	3	1.50	0	0.00
0.18-0.20	10	5.05	4	3.81	4	2.00	0	0.00	2	1.00
0.20-0.25	8	4.03	3	2.86	9	4.50	3	1.50	3	1.50
0.25-0.30	6	3.03	4	3.81	7	3.50	1	0.50	1	0.50
0.30-0.40	6	3.03	6	5.71	1	0.50	4	2.00	0	0.00
0.40-0.50	4	2.02	4	3.81	1	0.50	2	1.00	1	0.50
0.50-0.60	5	2.52	1	0.95	1	0.50	0	0.00	0	0.00
0.60-0.70	3	1.51	3	2.86	1	0.50	1	0.50	0	0.00
0.70-0.80	1	0.51	2	1.91	3	1.50	0	0.00	1	0.50
0.80-0.90	1	0.51	1	0.95	1	0.50	1	0.50	0	0.00
0.90-1.00	0	0.00	1	0.95	0	0.00	0	0.00	0	0.00
1.00-1.50	4	2.02	3	2.86	0	0.00	0	0.00	0	0.00
1.50-2.00	2	1.01	2	1.91	1	0.50	1	0.50	0	0.00
2.00-+	2	1.01	2	1.91	0	0.00	0	0.00	0	0.00

TABLE VII.—ANALYSIS OF SPECKS IN HANDSHEETS

Key	Kind	Frequency	Area (mm.²)	% Area
IB = inner bark	IB	25	4.0064	13.05
OB = outer bark	OB	2	0.8698	2.83
R = resin	R	40	2.7818	9.07
Sh = shive	Sh	30	20.5511	66.90
K = knotwood	K	4	2.3505	7.66
D = other dirt	D	1	0.0415	0.14
W = wool hairs	W	3	0.0905	0.35



ment of the longest axis of the speck is considered as its diameter, and the particles are classified as follows:

Specks
Number between 0.15 mm. and 0.5 mm. (small)
Number larger than 0.5 mm. (large)
Shives
Number between 0.15 mm. and 1.0 mm. (small)
Number larger than 1.0 mm. (large)
Threads
Number between 0.2 mm. and 2.0 mm. (small)
Number larger than 2.0 mm. (large)

After the specks in the four sheets have been counted and measured, the moisture-free weight of the sheets is determined and the dirt count is reported as the number of extraneous particles per pound, both as total and classified according to class groups by the equation

$$D = 7\ n/W \qquad (3)$$

where D is dirt count per pound, n is the number of particles, and W is the total weight of the specimen in pounds.

Fifty-pound sheets (24x36—500) were made on a Valley sheet mold and cut to 5 by 7 inches. A number of sets of four wet sheets each were examined with the bottom of the ground glass 3.5 inches above the top of the light bulbs (four 60-watt daylight bulbs) and a chin rest 14 inches above the sheets. Counts were made on Squares 1, 16, 24, 32, and 46. Then the same squares on the opposite side were counted by turning the sheet over and placing it in the upper left-hand corner, so that Square 41 coincided with Square 1 on the first side, thus counting the specks in Squares 6, 12, 34, 46, and 41. These results are shown in Table VIII.

TABLE VIII.—VARIATIONS IN THE NUMBER OF SPECKS PER GRAM OF MOISTURE-FREE PULP

Set	Squares Counted	Total Dirt Count per g. of Pulp
1	1, 16, 24, 32, 46	67.4
2	1, 16, 24, 32, 46	72.3
3	1, 16, 24, 32, 46	83.5
4	1, 16, 24, 32, 46	121.0
5	1, 16, 24, 32, 46 and opposite side	
	6, 12, 34, 46, 41	95.0

The lack of uniformity in these experiments suggested that the sheet should be made in a basis weight of 37 pounds (24x36—500), counting the number of specks in Squares 1, 16, 24, 32, and 46. To do this, seven sets of eight sheets each were made up; and, since the method implies that the count is to be made on one side only, and as one may select either side at random, counts were made on five of the seven sets, first using one side of the sheet and then the other side to discover how the counts vary. These results are shown in Table IX.

The fact that very poor checks were obtained in the experiments shown in Table VIII and also in the data given in Table IX indicates that this method leaves much to be desired.

TABLE IX.—DIRT COUNT BY THE SIMMONDS, BILLINGTON AND BAIRD METHOD EMPLOYING STANDARDIZED CONDITIONS

		Set 1	2	3	4	5	6	7
Dirt Count per g.	(a)	107.1	89.2	93.2	75.0	82.0	81.9	87.0
Moisture-Free Pulp	(b)	....	....	79.5	93.5	68.2	81.9	88.4

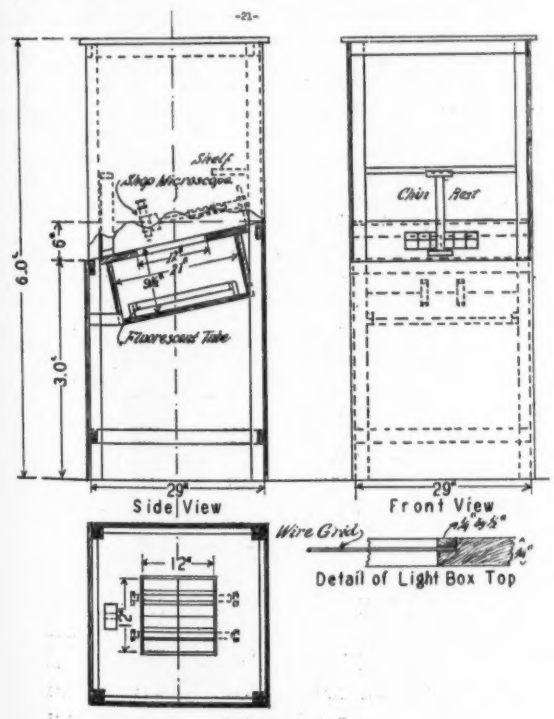


FIG. 3
Weyerhaeuser Speck Count Box

Mill Control Methods

These methods are to be used for continual checks during the manufacturing operation where the number of dirt specks is determined directly from the lap or drier sheets. The method must be reproducible, and as far as possible free from experimental errors and variations of personal judgment, and so arranged that it can be carried out in a minimum of time. The type of light box, kind and position of the illuminant, as well as the height of the eye point of the observer, are of importance. Here, as in the laboratory method, the number of test sheets, the areas and frequency distribution of the different areas of the dirt specks, and kind of specks in each group area must be considered, although to a more limited degree.

Weyerhaeuser Method *(3)*

A sheet of pulp is taken from the cutter box of the machine every half hour. A 24 by 24-inch sheet is cut from this sheet and is used to determine basis

weight (24x36—480). A 12 by 12-inch sheet is cut from the basis weight sample, thoroughly wetted with clean water, and placed on the grid of the Weyerhaeuser count box (*see* Fig. 3). As the specks are counted, they are marked with an indelible pencil. When a count of 100 is reached, a cross mark is made to avoid errors in cases where the count is high. When the specks visible on one side have been counted, the sheets are turned and the specks are counted on the reverse side.

After the count has been made, the sheet is carefully inspected to see that no specks have been missed. The total count on both sides is known as the total number of specks; and to obtain the dirt count in specks per moisture-free pound, the following equation is used;

$$D.C. = \frac{(\text{total specks/sq. ft.})\ (480)\ (6)\ (1.111)}{(\text{basis wt.})\ (\text{fraction A.D.})}. \qquad (4)$$

where 480 is number of sheets to a ream, 6 is the number of square feet in a 24 by 36-inch sheet, fraction A.D. is the fraction of airdry pulp in the sheet, and 1.111 is the conversion factor—airdry to moisture-free.

For the purpose of determining the influence of the type of light used and the distance of this light from the sheet, four 12 by 12-inch drier sheets were counted for each type of illumination with the chin rest at 14 inches above the sheet. These results are given in Table X which shows that the use of the daylight fluorescent tubes results in a higher dirt count. This is probably because the sheets remain moist and the light is more evenly distributed.

In order to obtain an idea of the uniformity of count which might be expected when counting at different eye levels of 14-, 9-, and 5-inch chin rests, 15 sheets were counted at each level using four 60-watt daylight bulbs at 4.5 inches from the top of the bulbs to the sheet, and two 17-inch, 15-watt fluorescent daylight tubes at 8 inches from the sheet. These results are given in Table XI and Fig. 4.

Micrometric measurements of the specks in the sheets and a rough analysis of the same were made with a shop microscope equipped with an eyepiece micrometer and attached to the box on a telescopic

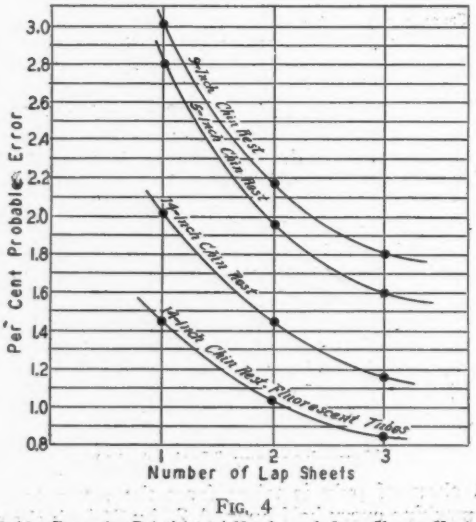


FIG. 4

Probable Error in Relation to Number of Lap Sheets Used with Different Chin Rests

TABLE X.—INFLUENCE OF TYPE AND POSITION OF LIGHTS ON DIRT COUNT AT 14-INCH CHIN REST (WEYERHAEUSER METHOD)

Type of Light	Distance of Lights inches	Dirt Count per Pound of Pulp *				
		1	2	3	4	Ave.
Four 50-watt White Bulbs	9.5	5480	5910	5660	5490	5635
Four 150-watt White Bulbs	9.5	6150	6310	6020	....	6160
Four 60-watt Daylight Bulbs	9.5	6010	6150	6410	6420	6249
Four 60-watt Daylight Bulbs	4.5	6540	6710	6680	6520	6610
Two 17-inch Fluorescent Tubes—15-watt	13.0	8530	9360	8560	8460	8727
Two 17-inch Fluorescent Tubes—15-watt	8.0	8900	8500	9090	8880	8842

* Moisture-free.

swing arm, as shown in Fig. 3. The specks measured and analyzed were selected as follows: indelible pencil lines were made across the sheet 3 inches from each side and one line was drawn across the middle. Ten specks along each line, making a total of 50 specks, were classified and the long and short "diameters" of each speck were determined and multiplied together to obtain the approximate area in square millimeters. The specks were divided into classes easily recognized without a reagent at a low magnification. The results were reported on a simplified frequency distribution chart typed as shown in Table XII, A and B, B being measurements and classifications of the specks in another sheet of the same pulp for comparison of the relative uniformity of this method. The advantage of this method is that it discloses the nature of the dirt causing trouble from a sales point of view, such as the frequency tabulation, the relative amount and size of the most objectionable specks, and also gives the mill operators an idea where the objectionable specks originated.

The time required for counting, measuring, and classification is less than one half of an hour, and the tabulation can be made by a typist in about the same time.

Clark's Method *(4)*

An area of at least 2,000 sq. cm. of pulp sheets is required for each test. The pieces comprising the specimen may be any convenient size so that this area may be examined in units having such an area as to give a total of between 20 to 30 readings for each test. The sample sheets are placed on a white background and the dirt particles and the "equivalent black area" of each is estimated by the use of Clark's estimation chart. The equivalent black area of a spot

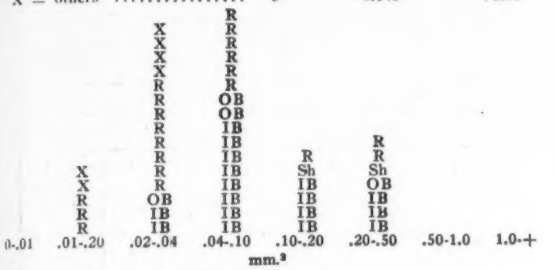
TABLE XI.—DIRT COUNT PER POUND MOISTURE-FREE PULP AT VARIOUS EYE LEVELS

Sheet	Bulbs			Fluorescent Tubes
	14 in.	9 in.	5 in.	14 in.
1	6540	8790	9440	8900
2	6710	8200	9560	8500
3	6680	7880	8750	8723
4	6520	8300	9110	8723
5	6820	7530	9410	9090
6	6490	8150	8280	8880
7	6650	8310	9050	8640
8	6820	7430	9860	8480
9	6490	7530	8560	8740
10	7100	7360	9320	8810
11	6930	8350	8580	8580
12	7010	8250	9020	8660
13	6450	8300	8650	8680
14	6860	8300	8900	8520
15	6580	7790	8840	8920
Ave. D.C.	6710	8031	9032	8723
S.D.	203	372	374	188
$\frac{\text{S.D.}}{\text{Ave. D.C.}} \times 100$	3.02	4.62	4.15	2.45
Per Cent P.E. 1.	2.02	3.05	2.80	1.45
Counting No. 2.	1.45	2.17	1.96	1.04
of Sheets 3.	1.15	1.80	1.60	0.84

TABLE XII.—CLASSIFICATION OF SPECKS IN THE DIFFERENT AREA GROUPS FOR FLUORESCENT LIGHTS AT 14-IN. CHIN REST

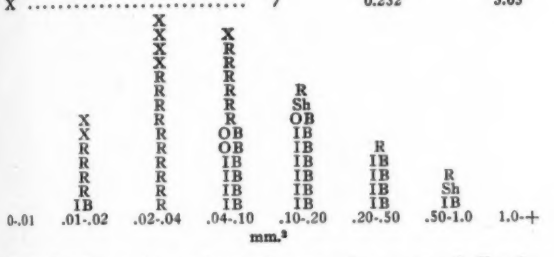
A

Key	Frequency	Area (mm.²)	% Area
IB = inner bark	17	2.339	49.80
OB = outer bark	4	0.352	7.50
Sh = shive	2	0.420	8.95
R = resin	21	1.437	30.60
X = others	6	0.143	3.15



B

	Frequency	Area (mm.²)	% Area
IB	16	3.227	51.30
OB	3	0.312	4.95
Sh	2	0.790	12.50
R	22	1.736	27.60
X	7	0.232	3.65



is defined as the estimated area of a spot of dirt in terms of the size of a perfectly black spot which would make the same visual impression against a pure white background. Specks with an equivalent black area of less than 0.05 sq. mm. are not reported.

If, after 20 or 30 readings have been taken, any individual reading is more than three times the average, a further set of specimen sheets must be examined to see if it is justified. If not, they are reduced to three times the average and included in the final average. Pieces of dirt obviously unusual should be ignored. Shives which appear to be dirt only when viewed at an angle should not be counted.

The results are reported as equivalent black area in square millimeter per square meter. Only the top or dirtiest side should be reported and results stated in parts per million.

For checking the areas of Clark's chart the circle was chosen as a convenient speck form which could be measured with an eyepiece micrometer in all size classifications. The results are shown in Table XIII and Fig. 5.

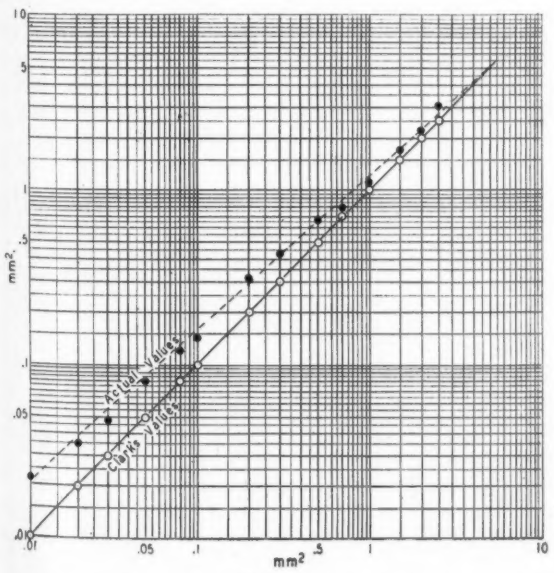


FIG. 5

Actual and Theoretical Values of Clark Speck Counting Chart

TABLE XIII.—MICROMETRIC MEASUREMENTS (SQ. MM.) OF SPECKS ON CLARK'S ESTIMATION CHART

Clark Values	Actual Values	Clark Values	Actual Values
.01	.0216	.30	.430
.02	.0350	.50	.655
.03	.0480	.70	.894
.05	.0800	1.00	1.210
.08	.1210	1.50	1.750
.10	.1410	2.00	2.440
.20	.3180	2.50	3.140

The table and the curves show that the actual values of the specks given in the chart are considerably larger than the given value. However, the chart was used as such without compensating for the inaccuracy.

For the purpose of comparing the evaluation of the relative square areas of specks in pulp determined by the Clark estimation chart and actual micrometric measurements of the specks, wet handsheets like those used for speck count by the Graff method were placed on a glass plate laid over the grid in the Weyerhaeuser box and illuminated from below with the two 17-inch, 15-watt daylight fluorescent tubes, and 200 of the marked specks were compared for size by the estimation chart using a 14-inch chin rest eye level. The results are shown in Table VI and Fig. 6, which indicate that the speck size estimated by this method gives a relatively larger number of small specks and a much smaller number of larger specks than those obtained by direct micrometric measurements.

For actual speck count determination of pulp as described by the Clark method, the Weyerhaeuser box was equipped with an overhead 17-inch, 15-watt daylight fluorescent tube for evenly reflected light. Six 12 by 12-inch dry lap sheets were placed over the grid and all the specks were counted, and sizes were estimated with the help of the estimation chart at an eye level of a 14-inch chin rest; separate counts were made on both sides (*a* and *b*) of the sheet. The results of the counts of these six sheets are shown in Table XIV.

TABLE XIV.—SPECK COUNT AND PARTS PER MILLION AS DETERMINED BY THE CLARK METHOD

Count	Number of Specks in 12 by 12-inch Sheets (a)	(b)	Dirt Count Parts per Million (a)	(b)
1	143	121	51.40	51.80
2	132	122	72.50	54.25
3	129	122	60.60	56.90
4	151	137	46.40	55.10
5	170	145	59.30	57.80
6	184	155	64.10	49.60

The determination of an "equivalent black area" in pulp in itself not only depends to a large extent upon individual judgment, particularly in unbleached pulp, but it should be remembered that there are many specks which may have a relatively low equivalent black area in the pulp but which have an intense and high equivalent black area when converted into paper. Because it is visually impossible to determine the dirtiest side of a pulp sheet, both sides of the sheet should be counted in determining the actual speck areas of the pulp.

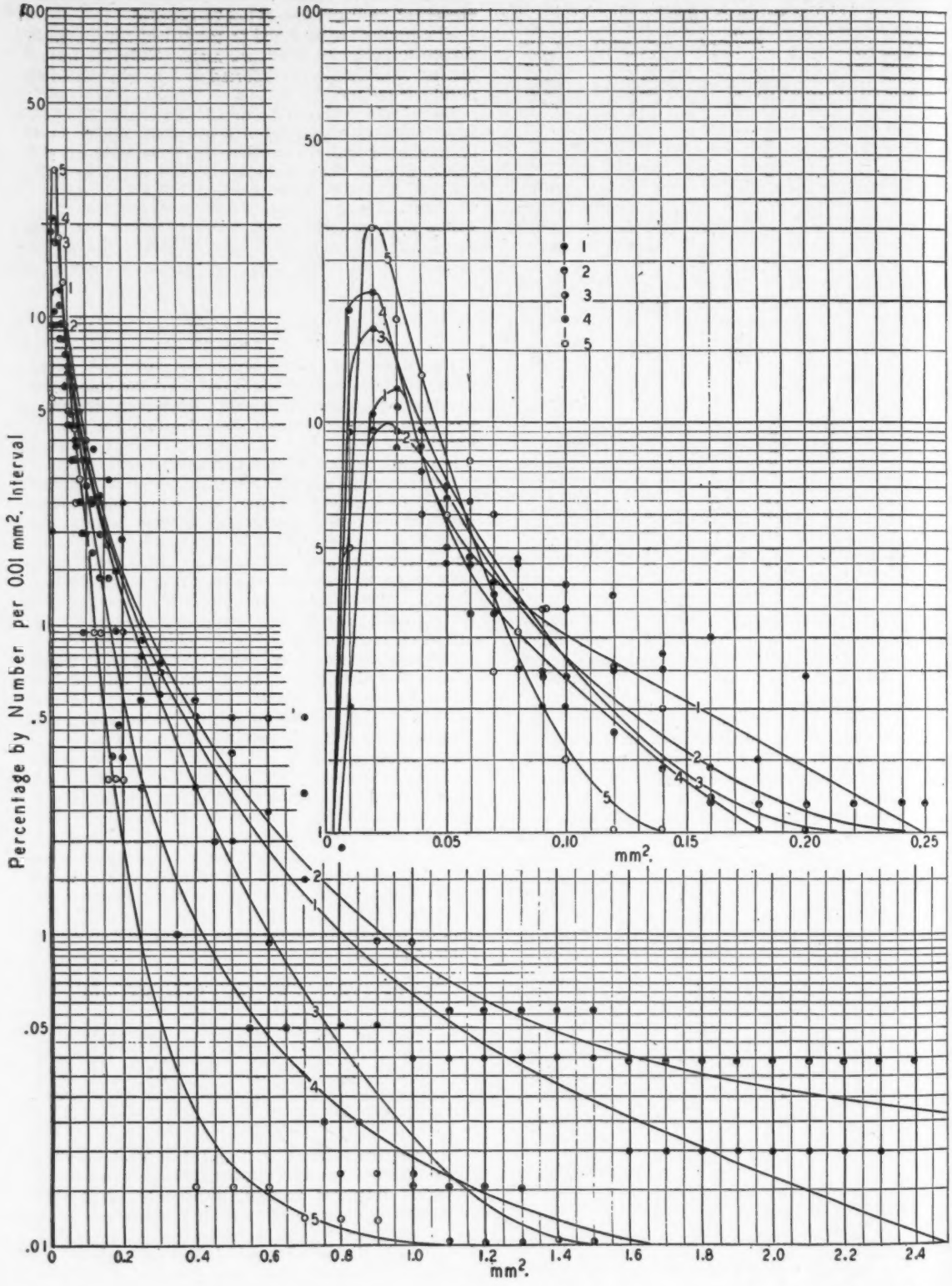


FIG. 6

Frequency Distributions of Speck Areas at Different Heights of Chin Rest
Laboratory Method: Curves 1 and 2, 14-inch level; Curve 3, 9-inch level; Curve 4, 5-inch level. Curve 5: Clark Estimation Method.

Open Box Method

This method is used with variations in many pulp mills. The method consists in having a light box large enough to take one or two untrimmed drier sheets, covered by window panes the size of the sheets and illuminated with a number of Mazda lamps. The number and wattage of the light bulbs vary, as does the placement of the box in the mill. The box may be in a relatively dark corner of the mill or in a place where window light or overhead lights may influence the count. The method has no place among standardized procedures, but a few experimental counts based upon the method were made for the purpose of comparison.

A double light box equipped with eight 60-watt bulbs comprised the setup for this experiment and the specks in eight full-sized dry lap sheets were counted of which, besides the transmitted light from the box, the count of Sheet 1 was made with strong sunlight reflected from a nearby window, Sheets 2 and 5 with dull light from the window and Sheets 6 to 8 with the room darkened. Specks on both sides, *a* and *b*, were counted and the total reported as number of specks per ovendry pound of pulp. The data in Table XV show that the external lighting conditions affect the count and that the number of surface particles that can be seen increases with improved lighting conditions in the room. The count per moisture-free pound is also much less than that obtained by the Weyerhaeuser method (4896 specks as compared with 8807).

TABLE XV.—SPECK COUNT BY THE OPEN BOX METHOD

Outside Light	Count	Specks per Pound		Total Count
		a	*b*	*a* + *b*
Sunshine	1	2990	3400	6390
Dull Light	2	2345	2880	5225
	3	2320	2798	5118
	4	2362	2662	5024
	5	2230	2797	5027
Dark	6	1782	2350	4132
	7	1536	2281	3817
	8	1682	2758	4440

Conclusions

This work shows that in preparing handsheets for the laboratory method of determining the relative amount of specks or dirt in pulp, the following factors are of importance:

The pulp must be disintegrated until it is completely defibrillated; beyond this point stirring has no influence upon the speck count.

The basis weight of the sheet must be heavy enough to stand handling and at the same time be as light as possible for a complete speck count; 37 pounds (24x36—500) seems to be the most appropriate.

The sheets should be subjected to pressure with felts between each sheet to obtain a smooth even surface. The specks are determined from the wet sheets by counting both sides of the sheet.

The kind of light and the distance of the light from the ground-glass plate in the box is of importance. Four 60-watt daylight bulbs give the highest count and 3.5 inches from the top of the light bulbs to the bottom of the ground glass gives the best illumination. (Work done with the Weyerhaeuser box for speck count in the mill suggests that short daylight fluorescent tubes may be even better.)

The height of the eye point above the sheet is of great importance, not only for the uniformity of count but also for the relative number of specks observed and the frequency distribution of the relative square area of the specks. A chin rest 14 inches above the sheet has been found to give the most desirable results.

The uniformity of counts obtained at different heights of the eye levels, counting a large number of sheets, shows that counts can be made with a percentage probable error of ±2.5%, using eight sheets for the count and that nothing is gained by increasing the number of sheets beyond this number.

For a mill control method, the following points have to be considered:

The light box must be so constructed and placed that the speck count will not be influenced by external light conditions.

The lap sheets should be thoroughly wetted so that as many specks as possible can be seen with transmitted light and the specks on both sides should be counted.

The best type of illumination for this box was found to be two 17-inch, 15-watt daylight fluorescent tubes at a distance of 8 inches from the bottom side of the sheet, which produces a very even illumination and also prevents the sheet from drying out during the counting.

The best height of the eye point was found to be the same as for the laboratory method—using a 14-inch chin rest above the sheets.

One sheet 12 by 12 inches was found to be sufficient for a reasonably small probable error of the count.

The relative square area and a rough qualitative analysis of the most common specks in woodpulps can easily be determined with a shop microscope attached to a swinging telescopic arm over the opening of the light box.

When the results of the classifications and area determination are typed as suggested in Tables VII and XII, they disclose in a simple manner the nature of the dirt specks and also the relative amounts and sizes of the most objectionable specks as well as their source.

Acknowledgments

The authors wish to express thanks to B. L. Browning and Charles M. Koon of The Institute of Paper Chemistry for their valuable suggestions during this work.

Literature Cited

(1) Graff, John H. "Pulp and Paper Microscopy" (Appleton) mimeographed. C 1936.
(2) Simmonds, F. A., Billington, P. S., and Baird, P. K., *Paper Trade J.* 97, no. 4:40-42 (July 27, 1933); *Tech. Assoc. Papers* 16:288 (1933).
(3) Private communication by G. S. Brazeau, manager, Everett Mill, Weyerhaeuser Timber Co., Everett, Wash.
(4) Clark, James d'A., *Paper Trade J.* 96, no. 26:27-28 (June 29, 1933); *Tech. Assoc. Papers* 16:347 (1933).

APPENDIX

Suggested Methods

LABORATORY CONTROL

The pulp is thoroughly disintegrated, using 40 gram of airdry pulp in 12 liters of distilled water. From this, eight sheets are formed on a Büchner funnel, using a clean felt as a filter pad for each sheet, which should have a basis weight of 37 pounds (24x36—500). The sheets are placed one on top of another with felts between, wrapped in a clean white paper and pressed for two minutes under a one-ton over-all force. The sheets are placed, one at a time, on a special light box (*see* Fig. 1) kept in a darkroom and illuminated with four 60-watt daylight Mazda bulbs or two short daylight fluorescent tubes with the top of the light 3.5 inches below the bottom of the ground-glass plate. All the visible dirt on both sides

of the sheet is counted and marked with an indelible pencil. Measurements and exact qualitative analysis can be made by picking out the specks and placing them on a microscope slide or, roughly, if the box is equipped with a shop microscope attached to a swinging telescopic arm, they can be made directly from the sheets.

The sheets are then oven-dried and weighed to the nearest tenth of a gram and the speck count reported as number of specks per gram of pulp.

If the measurements and analysis are not made directly on the sheets, 50 specks are removed from the remoistened dried sheets and placed on a slide which is put under the microscope for micrometric measurements and qualitative analysis.

MILL CONTROL METHOD

The Weyerhaeuser method as described in this paper with the following modifications and additions should offer the most convenient and accurately reproducible method for mill operation.

The lights should be two 17-inch, 15-watt daylight fluorescent tubes placed eight inches below the grid. Wetted lap sheets (12 by 12 inches) should be examined on both sides of the sheet at an eye level given by a 14-inch chin rest above the sheet. The box should be placed in a convenient place in the mill with the open side away from windows or other strong reflected light.

A swinging telescopic arm with a shop microscope attached can be placed on the box in such a manner that it can reach all parts of the sheet. Fifty specks in the moistened sheet are measured and analyzed and classified so that a typist can prepare the frequency tabulation of size and type of specks as is shown in Table XII.

For unbleached pulp a 12 by 12-inch sheet is sufficient for reasonable accuracy, but for bleached pulp more sheets may be advisable. The specks are reported as number of specks per moisture-free pound of pulp.

Note—The above are suggested as laboratory and mill control methods, whereas the authors understand that Clark's method is intended for the sale or purchase of pulp.

Delaware Valley TAPPI Discusses Sizing

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry held its regular monthly meeting at the Engineers Club, Philadelphia, Pa., Friday evening, November 1.

Ralph Kumler, American Cyanamid Company, gave a talk on wax sizing. The history of wax as a sizing agent was presented and the main benefits obtained from its use outlined. In general, increased sizing, high production when drying is the bottle neck, better finish, better printing quality, and increased flexibility may be obtained from beater sizing. It is believed that the ratio of 20-30% wax and 80-70% rosin size gives optimum sizing. The effect of wax on stiffness or burst appears to be nearly a straight line function of the amount of wax present. Acid-stable type waxes were discussed, as well as the more usual soap emulsion types. Both can be used in the beaters but the acid-stable type is frequently of an advantage in surface sizing when there is a tendency for acidity to be leached from the sheet at the size press. When soft water without much heating is used, soap emulsions are not as good as the acid-stable type.

Amorphous wax generally affects strength less and does not impart as much slipperiness to a sheet as paraffin wax.

Following Mr. Kumler's talk a lengthy discussion was carried on as to various sizing problems. Seventy-eight persons attended the dinner meeting.

Among those present were: E. J. Albert, R. S. Apple, Arthur J. Arsenault, Fred Attwood, J. R. Atwater, D. E. Bates, R. M. Bates, S. W. Blanchard, A. L. M. Bixler, S. G. Briscoe, T. E. Brookover, J. A. Brown, Henry D. Childers, C. M. Connor, A. M. Cooper, J. D. Davis, R. H. Dillinger, D. S. Dieffenderfer, H. Donnely, G. Antonelli, J. K. Farrell, George A. Farrah, James H. Fritz, A. J. Gondyke, A. E. Griffin. Wm. C. Griffin, Samuel Hagner, J. F. Halladay, E. N. Poor, Lois V. Hans, Frank Hamel, Alfred M. Hartley, Ward Harrison, H. F. Hoffmann, C. E. Kinney, H. W. Kramer, R. Kumler, J. J. Lafferty, M. L. Little, John W. MacAllister, F. J. McAndrews, Louis E. McGrath, Alex. McInnes, Robert C. McLee, Walter Morehouse, C. E. Mueller, J. Nevison, F. W. Nienow, M. D. Reuben, C. W. Rivise, John Roslund, Ralph W. Shaffer, Edw. A. Shallcross, Chas. A. Shubert, G. L. Schwartz, Henry C. Speel, H. M. Spurlin, Howard H. Street, E. I. Stokes, R. J. Stuart, Jr., Geo. M. Suydam, Thomas W. Toovey, R. Tutt, Jr., J. W. Voller, A. E. Waugh and Almeron W. Wickham.

Ohio TAPPI Meets at Hamilton

The Ohio Section of the Technical Association of the Pulp and Paper Industry met at the Anthony Wayne Hotel, Hamilton, Ohio on Thursday, October 24. J. E. Burdsall of the Crystal Tissue Company presided as chairman.

A. W. Brandt, Jr. of the American Rolling Mills Company, Middletown, Ohio discussed the application and uses of stainless steels in the paper industry and J.P. Strasser of the Stein, Hall Manufacturing Company, Chicago, Ill. talked on the use of starch in the paper industry. An interesting discussion followed the presentation of both papers. The next meeting will be held jointly with the Miami Valley Division of the Superintendents Association in January.

Among those present were the following: J. R. Arthur, M. L. Barker, H. H. Bennett, Wm. Boast, A. W. Brandt, Jr., Duncan Brown, Paul Buchheit, John Burdsall, C. H. Butterfield, Phil Cade, Bohdon E. Chemerys, T. M. Chemerys, Alfred S. Clegg, H. H. Cunningham, Thage Dahlgren, Leo Fleischer, A. H. Frazer, Arthur F. Gardner, Leo Geiser, K. P. Geohegan, O. P. Gephart, Ed Geran, D. J. Goodman, W. H. Hall, J. A. Ham, H. H. Harrison, H. Harvey, O. W. Heim, R. Holmes, R. P. Kast, Homer H. Latimer, Harold Leighton, H. B. Lerman, C. L. Lockett, Edward Lum, J. Robt. McGuff, C. L. McKasson, C. R. Merriman, J. A. Nickles, Alfred Piecul, H. P. Quinn, John Ramsey, C. W. Richards, Douglas Robbins, Carl D. Roess, A. J. Smith, R. H. G. Smith, Claud Sorg, J. P. Strasser, G. H. Suhs, Wm. R. Turner, Jr., H. Waffenschmidt, Ralph E. Waggoner, Robt. R. Weber, and D. M. Yost.

Brown Co. Moves Offices

PORTLAND, Me., November 4, 1940—The general sales office of the Brown Company has been transferred from this city to 500 Fifth avenue, New York City, effective today.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Bleached Sulphite More Acute—Some Grades of Old Waste Lower.

Effective September 30, 1939, under Treasury Decision 49,970, all publications, exchanges and trade associations, were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.

NEW YORK IMPORTS

WEEK ENDING NOVEMBER 2, 1940

SUMMARY

Newsprint .....1,349 rolls
Miscellaneous paper .....23 cs.

NEWSPRINT

H. G. Craig Co., Inc., ———, Donnacona, 305 rolls.
International Paper Co., ———, Gatineau, 380 rolls.
H. G. Craig Co., Inc., ———, Donnacona, 324 rolls.
H. G. Craig Co., Inc., ———, Donnacona, 340 rolls.

MISCELLANEOUS PAPER

Remington, Rand, Inc., ———, Kobe, 23 cs.

RAGS, BAGGINGS, ETC.

E. J. Keller Co., Inc., ———, Bombay, 110 bls. old jute rags.
C. Comiter Co., ———, Bombay, 200 bls. cotton waste.
W. Intner & Co., Inc., ———, Bombay, 50 bls. cotton waste.
Williamson Products Co., ———, Pernambuco, 1,262 bls. cotton linters.
Williamson Products Co., ———, Cabedello, 1,172 bls. cotton linters.
Green Textile Associates, Inc., ———, Shanghai, 100 bls. cotton waste.

OLD ROPE

W. Steck & Co., ———, Calcutta, 117 bls.
———, ———, Cristobal, 2 bls.

BALTIMORE IMPORTS

WEEK ENDING NOVEMBER 2, 1940

Ronnie, Inc., ———, Kobe, 10 cs. paper.

HOUSTON IMPORTS

WEEK ENDING NOVEMBER 2, 1940

Dallas Waste Mills, ———, Shanghai, 15 bls. rags.

LOS ANGELES IMPORTS

WEEK ENDING NOVEMBER 2, 1940

———, ———, Powell River, 2,265 pkgs. newsprint.
———, ———, Shanghai, 580 bls. cotton rags.

Empire State Association to Meet

The Empire State Paper Trade Association will have a meeting on November 19 in Rochester. Robert H. Ziegler, assistant secretary of the National Paper Trade Association will speak at this meeting, and it is expected that many topics of current interest will be discussed.

Indianapolis Demand Expands

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., November 4, 1940—Judging from various reports in the local field, paper demand slowly is gaining impetus, following some slump in the summer and early fall. In many lines, the trade is feeling the increase due directly to industrial expansion because of the defense program. Prices continue to hold firm in all lines. This is pleasing to the trade, which apparently desires a firm price market without any boom prices to complicate the situation.

Demand for fine paper last week continued steady with a healthy undertone, according to local jobbers. Bonds, ledgers and book paper all appeared to be moving in good volume, with a slight increase over the same period a year ago and over the summer months. Prices continue firm.

Lovely fall weather has kept the building paper demand at a high level for this time of the year. During the last week building permits exceed those of any week since 1929. In spite of all efforts of dealers to keep their stocks low until after the first of the year, current demand is compelling them to buy much heavier than they did a year ago and it is likely that their stocks will be relatively high when cold weather finally comes.

Paper box demand continues to improve. Local factories are working nearly to capacity production and report a steadily expanding consumer base. Local factories are shipping to more customers than they were a year ago and say the outlook is very optimistic. Prices are firm with a tendency toward more strength.

Newsprint demand has improved slightly with prices showing no change. Lineage in the larger metropolitan papers of the state has increased much of it being due to domestic advertising. The trade is expecting more lineage this month with the approach of the holidays.

A better demand has been seen for old paper and prices appear to be stronger than the level for the last month. Rags continue strong also with a steadily increasing demand.

G. B. Gibson to be Sales Manager

GLENS FALLS, N. Y., November 4, 1940—Announcement is made that George B. Gibson has been appointed general sales manager of the Union Bag and Paper Corporation to succeed L. J. Doyle. The latter has been made general production manager. Mr. Gibson is well known in Northern New York where he was connected with the Watertown plant of the Bagley & Sewall Company for several years. After leaving that concern in 1936 he accepted a position with the Container Corporation of America at a new kraft board mill at Fernandina, Fla. A year later he became connected with the Union Bag and Paper Corporation and since 1937 has been located in New York City.

New York Paper and Pulp Market Review

Kraft Paper Production and Shipments Move Sharply Upward As Demand For Wrapping Paper Rises — Pulp Market Continues Weak — Mill Buying of Rags Currently Reported Fair.

Office of the PAPER TRADE JOURNAL,
Wednesday, November 6, 1940.

Sales volume in the wholesale paper market continues at a moderately good level in some lines, with no change in the market situation this week reflected in reports from many manufacturers, representatives, jobbers, and general paper merchants. General business activity, locally and in many sections of the country is rather slowly increasing. As paper sales, like many other non-durable goods, rather closely follows the trend of general business, the outlook for paper continues excellent.

The index of general business activity rose to 109.3 per cent for the week ended October 26, from 108.1 per cent for the preceding week, compared with 104.4 per cent for the like period last year.

Paper production for 251 mills for the week ended October 26 was estimated at 89.6 per cent, compared with 85.0 per cent for 1939, with 82.4 per cent for 1938, with 65.3 per cent for 1937, and with 87.5 per cent for the corresponding week for 1936.

Paper board production for the week ended October 26 was 80.0 per cent, compared with 85.0 per cent for 1939, with 68.0 per cent for 1938, with 56.0 per cent for 1937, and with 79.0 per cent for the corresponding week for 1936.

Reports in some quarters of the trade indicate that demand for paper is little changed. Sales of the medium and higher grades of paper for letterpress and advertising is reported continuing below trade expectations. The paper market, as a whole, is rather weak, but prices are fairly well maintained in all grades. A little more activity in sulphite bond papers in the lower and medium grades has been reported. Sales in some grades groundwood papers are reported fair to moderate.

Kraft paper production and orders have shown a sharp increase in the last two weeks and the trend in output and shipments is expected to continue upward for the remainder of the year. Orders for wrapping paper to meet the normal requirement of Christmas trade are apparently about three weeks later than formerly. Prices on all grades of paper continue unchanged at prevailing market quotations.

Mechanical Pulp

No important change in demand or prices has been reported in mechanical pulp this week. The market is rather weak. With ample stocks on hand no change in the market situation is expected in the trade and improvement is contingent upon increased demand, with the outlook for the future excellent.

Chemical Pulp

Reports from some quarters of the trade indicate this market is relatively weak, while prices remain unchanged. It has been pointed out by competent authority, that the decline in total available chemical pulp stocks in the third quarter, represents about 33,000 tons per month. Should this condition prevail to the end of the year, total inventories will decline to about 425,000 tons on January 1, 1941, or about 48 per cent lower than on January 1, 1940.

Rags

Mill buying of the higher grades of cuttings is reported fair this week. Activity in the market, as a whole, is rather slow at this date. No important change in prices on any grade of new and old domestic rags has occurred this week.

Old Rope and Bagging

Trading in old rope continues steady with mills taking supplies freely at prevailing quotations. No important change in prices has been reported during the week.

Demand for old baggings is reported fair at this date. Supplies are limited and as this situation is reasonably certain to continue, this market is firm. Prices are unchanged.

Old Waste Paper

The market situation in paper stocks is less firm, due to softer prices on folded news and No. 1 mixed paper. Although some price reductions on these grades, up to $1 per ton on No. 1 mixed paper, were reported a few days ago, prices hold unchanged at this date.

Twine

No important change in demand or prices has been reported during the current week. Prices continue fairly firm on all grades of hard and soft fiber twines.

B. C. Forest Industries Prosper

British Columbia's forest industries may yield a record-breaking revenue of close to $100,000,000 this year, according to present estimates. Last year the figure was $88,000,000, which included $50,000,000 for lumber and $16,000,000 for pulp and paper. The average for the past ten years is about $60,000,000.

This year production of lumber, as a result of continuing demand from the United Kingdom and the new defense requirements of Canada, has attained unprecedented volume, and even though prices are being kept well in check by the Timber Control Board the greatly increased output alone will account for a sharp rise in aggregate value of the cut.

Pulp and paper will also show a substantial advance.

With both the big newsprint mills, Powell River and Pacific Mills, working full time and gradually expanding their field of operation — Powell River has entered the unbleached sulphite pulp and building paper trades within the past few months, and with B. C. Pulp and Paper Company's two mills turning out more bleached sulphite and rayon pulp than ever before, the expectation is that this division of the forest industry will report a total revenue not much less than $20,000,000.

KALAMAZOO

TILE CHEST

Adapted for Use with Agi-flo Pump

The Shartle Agi-flo agitates and delivers the stock. The Kalamazoo Glazed Tile Chest gives you the advantages of low cost storage and the utmost in cleanliness.

More than 700 installations of Kalamazoo Glazed Tile Tanks now in use prove their unvarying dependability. For maximum efficiency plan to use a Kalamazoo Chest with your next Agi-flo, or any other type of agitator.

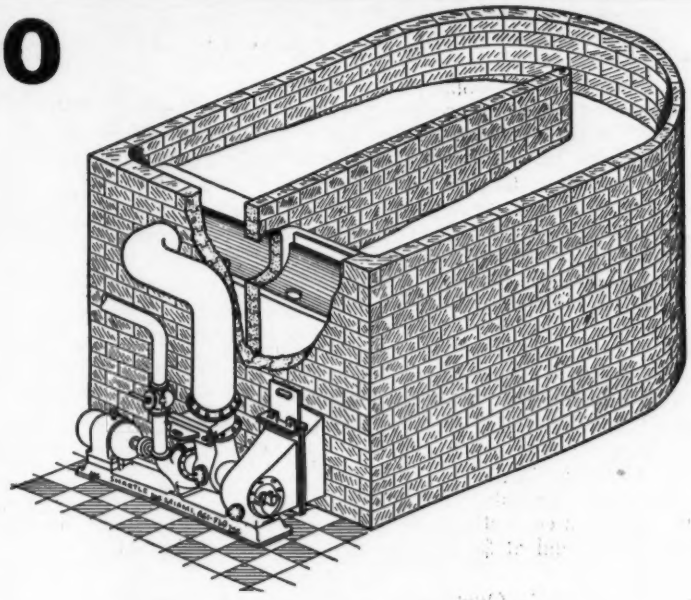


Illustration courtesy of Shartle Brothers Machine Company, manufacturers of the Shartle Agi-flo Pump.

GLAZED TILE

KALAMAZOO TANK & SILO CO.

KALAMAZOO, MICHIGAN

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EXCELSIOR KNOX Woolen Co. Camden, Me. FELTS & JACKETS

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CAMDEN, MAINE.

PRICE & PIERCE, LTD

Wood Pulp & Paper Agents

60 East 42nd Street New York City

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, November 6, 1940.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. Demand reported moderate for the week. The pulp is currently quoted at $35 per ton, in barrels, at works; the powder is offered at $50 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm with demand reported fair for the week. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN — Quotations on casein are reported little changed for this week. Standard domestic casein, 20-30 mesh, is currently quoted at from 11½ to 12 cents per pound; 80-100 mesh, at from 12 to 12½ cents per pound; all prices in bags, car lots. Standard Argentina casein is currently offered at 12 cents per pound. No quotations on French casein.

CAUSTIC SODA—Prices on caustic soda are firm and unchanged. Shipments continue in steady volume. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—The demand for chlorine is reported good. Prices are firm and continue unchanged for the current week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported as firm with prices higher for the week, "G" gum rosin is currently quoted at $1.83 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $1.86 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $2.53 per cent, f.o.b., works.

SALT CAKE—Prices on salt cake are firm under a good demand with current quotations continuing nominal. Domestic salt cake is currently quoted at $17 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $20 per ton on imported salt cake continues nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market quotations. Shipments reported in fair volume. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are reported firm and continue unchanged at prevailing market quotations. Pearl is currently quoted at $2.90 per 100 pounds; powdered starch at $3 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Shipments reported steady for the week. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at $1.60 per 100 pound, in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and continue to conform to prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mills. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@	$5.75
Superstandard	4.87½	"	5.25
Northern Standard Wrapping	4.37½	"	4.62½
Standard Wrapping	4.25	"	—
Tissues—Per Ream—Carlots			
White No. 1	.97½	"	—
White No. 1 M. G.	.95	"	—
White No. 1½	.80	"	—
White No. 2	.75	"	—
Anti Tarnish M. G.	.80	"	—
Colored	.85	"	—
Kraft	.87½	"	—
Manila	.77½	"	—
Unbl. Toilet, 1 M.	3.75	"	—
Bleached Toilet	5.26	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.10	"	—
Bleached, Jr.	3.60	"	—
Manila—per cwt.—C. l. l. a.			
No. 1 Jute	8.25	@	10.25
No. 1 Manila Wrapping, 35 lb.	5.25	"	—
No. 2 Manila Wrapping, 35 lb.	5.00	"	—
Boards, per ton—			
News	35.00	@	40.00
Chip	35.00	"	40.00
Sgl. Mla. L.L. Chip	55.00	"	57.00
White Pat. Coated	67.00	"	70.00
Kraft Liners	55.00	"	—
Binders Boards	73.00	"	80.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	31.05 " 36.50	32.20 " 37.75
85% Rag	.... "	29.90 " 35.00
75% Rag	23.60 " 27.75	24.75 " 29.00
65% Rag	.... "	21.65 " 26.25
50% Rag	17.55 " 21.50	18.70 " 22.75
25% Rag	14.65 " 17.75	15.80 " 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$9.35@$11.50	$11.55@$12.75
No. 2	8.50 " 10.25	9.65 " 11.75
No. 3	8.05 " 9.25	9.20 " 11.25
No. 4	7.70 " 9.50	8.90 " 10.75

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$11.90	@	$13.50
No. 2 Glossy Coated	10.35	"	11.75
No. 3 Glossy Coated	9.55	"	11.00
No. 4 Glossy Coated	9.15	"	10.50
No. 1 Antique (watermarked)	9.05	"	$10.50
No. 2 Offset	8.40	"	9.75
A Grade E. F.	8.20	"	9.50
A Grade S. & S. C.	8.45	"	9.75
B Grade E. F.	7.65	"	8.75
B Grade S. & S. C.	7.90	"	9.00
C Grade E. F.	7.35	"	8.50
C Grade S. & S. C.	7.60	"	8.75
D Grade E. F.	7.10	"	8.25
D Grade S. & S. C.	7.35	"	8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—
Moist ..... No prices
Dry ..... No prices

(Delivered)

No. 1 Domestic and Canadian ..... 40.00 @42.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.72½	@	3.87½
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	3.73
Strong Unbleached Sulphite	3.17½	"	3.75
News Grade, delivered			
Unbleached Sulphite	58.00	"	61.50

(On Dock, Atlantic Ports)

Kraft Bleached	4.12½	"	
Kraft Light & Strong	3.50	"	3.73
Kraft No. 1	3.40	"	3.60

(F. o. b. Pulp Mill)

Kraft Domestic and Canadian	2.75	"	3.37½

(Delivered)

Soda Bleached	3.30	"	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.

Shirt Cuttings—			
New White, No. 1.	6.50	@	6.75
Silesias No. 1	4.50	"	4.65
New Unbleached	6.50	"	6.75
Blue Overall	4.35	"	4.50
Fancy	3.25	"	3.50
Washables	2.00	"	2.15
Mixed Khaki Cuttings	2.75	"	3.00
O. D. Khaki Cuttings	3.00	"	3.15

Old Rags

White, No. 1—			
Repacked	3.50	"	3.65
Miscellaneous	2.75	"	3.00
White, No. 2—			
Repacked	2.50	"	2.75
Miscellaneous	2.00	"	2.25
Thirds and Blues—			
Repacked	1.50	"	1.65
Miscellaneous	1.10	"	1.25
Roofing Rags—			
No. 1	1.00	"	1.10
No. 2	.95	"	1.00
No. 3 (bagging)	.90	"	1.00
No. 4	.60	"	.65
No. 5A	.60	"	.65

Foreign Rags

All prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxford	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

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NENSJÖ CELLULOSA A.-B.
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Edsvalla, Sweden
Hallein & Villach, Austria

Unbleached Sulphite
AKTIESELSKABET GREÅKER CELLULOSEFABRIK
Greaker, Norway
BERGVIK OCH ALA NYA AKTIEBOLAG
Söderhamn, Sweden
CELLULOSEFABRIKS A.-B.
Bratislava, Czecho-Slovakia
SVANÖ AKTIEBOLAG
Svanö, Sweden

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o .b. N. Y.)

Gunny No. 1—			
Foreign	2.75	@	3.00
Domestic	2.50	"	2.75
Wool Tares, light...	2.00	"	2.25
Wool Tares, heavy..	2.12½	"	2.25
Bright Bagging	2.25	"	2.50
Manila Rope—			
Foreign	4.75	"	5.00
Domestic	4.50	"	4.75
Jute Threads.....	2.62½	"	2.75
Sisal Strings.....	2.10	"	2.35
Mixed Strings.....	1.10	"	1.20

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.10	@	3.25
Ordinary Hard White No. 1....	2.25	"	2.50
Soft White No. 1..	1.80	"	1.90
Soft White Extra..	2.50	"	2.60
Flat Stock—			
Stitchless	1.10	"	1.25
Overissue Mag.....	.90	"	1.00
Solid Flat Book....	.80	"	.85
Crumbled No.	.70	"	.75
Ledger White Stock.	1.80	"	1.90
Ledger Stock Colored	1.30	"	1.40
Manila—			
New Env. Cut....	1.70	"	1.80
New Cuttings.....	1.30	"	1.40
Old Kraft Machine Compressed bales..	1.35	"	1.50
News—			
No. 1 White News	1.75	"	1.90
Strictly Overissue.	.70	"	.75
Strictly Folded....	.45	"	.55
Corrugated	.65	"	.67½
No. 1 Mixed Paper..	.32½	"	.35

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.18	@	—
White Hemp.....	.18	"	—
Fine Polished—			
Fine India.....	.22	"	—
Unpolished—			
Box	.16	"	—
Paper Makers.....	.13	"	—
Tube Rope.....	.14¾	"	—
Wall Paper.....	.16	"	—
Wrapping	.16	"	—
Soft Fiber Rope...	.14	"	—
Cotton	.24	"	—

(Hard Fiber)

Medium Java.....	.10	"	—
Mex. Sisal.....	.09½	"	—
Manila	.23	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f.o.b. Phila.)

Shirt Cuttings—			
New White No. 1.	.06½	@	.07
New White No. 2.	.03½	"	.04
Light Silesias.....	—	"	.04½
Silesias, No. 1....	—	"	.04
Black Silesias, soft	—	"	.03
New Unbleached...	.06	"	.06¼
Washable Prints...	.02¾	"	.02¾
Washable, No. 1..	—	"	.01½
Blue Overall.....	.04	"	.04½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales....	—	"	.03
New Black Soft...	.02½	"	.02¾
New Light Seconds	—	"	.04
New Dark Seconds	—	"	1.50
Khaki Cuttings—			
No. 1 O. D.....	.03½	"	.03¾
No. 2 Mixed.....	.01¾	"	.02
Corduroy	.01¾	"	.01½
New Canvas.....	.04½	"	.05
New Black Mixed.	—	"	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	"	3.00
Thirds and Blues—			
Miscellaneous	1.35	"	1.50
Repacked	1.55	"	1.65
Black Stockings (Export)	3.50	"	4.00
Roofing Stock—			
Foreign No. 1..	Nominal		
Domestic No. 1...	1.10	"	1.15
Domestic No. 2...	.95	"	1.00
Roofing Bagging..	.85	"	.90

Bagging

(f.o.b. Phila.)

Gunny, No. 1—			
Foreign .....Nominal			
Domestic	2.25	@	2.50
Manila Rope.....	—	"	4.75
Sisal Rope.....	1.75	"	2.00
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	2.25	"	2.50
No. 2.....	—	"	1.50
Wool Tares, heavy..	3.50	"	3.75
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	2.00	"	2.25

Old Papers

(f.o.b Phila.)

Shavings—			
No. 1 Hard White	2.40	@	2.50
No. 2 Hard White	2.10	"	2.15
No. 1 Soft White	2.00	"	2.10
No. 2 Soft White	1.60	"	1.75
No. 1 Mixed.....	.90	"	1.00
Solid Ledger Stock..	1.90	"	2.00
Ledger Stock, white.	1.65	"	1.70
Ledger Stock, colored	1.10	"	1.15
No. 1 Books, heavy..	.80	"	.85
Manila Cuttings.....	1.75	"	1.80
Print Manila.....	.50	"	.55
Container Manila....	.45	"	.50
Kraft Paper.....	1.35	"	1.40
No. 1 Mixed Paper..	.40	"	.45
Straw Board Chip...	.40	"	.45
Binders Board Chip..	.40	"	.45
Corrugated Board...	.60	"	.65
Overissue News.....	.70	"	.75
Old Newspapers.....	.50	"	.55

BOSTON

Old Papers

(f.o.b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.00
No. 1 Soft White	2.00	"	2.25
No. 2 Mixed.....	.75	"	.80
Solid Ledger Books..	1.50	"	1.75
Overissue Ledger Stock	1.75	"	2.00
Mixed Ledgers.....	1.25	"	1.50
No. 1 Heavy Books	1.10	"	1.20
No. 1 Books, Light..	.75	"	.85
Crumpled Stitchless Book Stock.....	.75	"	.85
Manila Env. Cuttings	1.85	"	2.00
Manila Envelope Cuttings, extra quality	2.35	"	2.60
White Blank News..	1.40	@	1.50
No. 1 Kraft.....	1.25	"	1.30
Extra No. 1 Kraft...	1.00	"	1.65
Mixed Papers.....	.35	"	.40
Print Manila.....	.55	"	.60
Container Manila...	.60	"	.70
Old Newspapers.....	.50	"	.55
Paper Wool Strings.	.95	"	1.10
Overissue News.....	1.00	"	1.10
Box Board Chips....	.40	"	.45
Corrugated Boxes...	.60	"	.65
Kraft Corrugated Boxes	1.00	"	1.05
New Kraft Corrugated Cuttings	1.45	"	1.60
Screening Wrappers.	.70	"	.80

Bagging

(f.o.b. Boston)

Gunny Bagging—			
Foreign	—	"	2.35
Domestic	2.25	"	2.40
Sisal Rope.....	2.25	"	2.50
Mixed Rope.....	.85	"	1.00
Transmission Rope—			
Foreign	—	"	2.40
Domestic	2.00	"	2.25
Soft Jute Rope.....	3.25	"	3.50
Manila Rope—			
Foreign .....(nominal)			
Domestic	4.75	"	5.00
Jute Carpet Threads.	1.50	"	1.75
Bleachery Burlap....	4.00	"	4.25
Scrap Burlap—			
Foreign	2.35	"	2.50
Domestic	2.15	"	2.35
Scrap Sisal.....	2.25	"	2.50
Scrap Sisal for Shredding	2.30	"	2.65
Wool Tares—			
Foreign, Heavy...	2.25	"	2.40
Domestic	2.40	"	2.50
Aust. Wool Pouches.	2.75	"	3.00
New Burlap Cuttings	3.75	"	4.00
Heavy baling bagging	2.25	"	2.40
Paper Mill Bagging..	1.75	"	2.00
No. 2 Bagging.....	.75	"	.80

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	—	@	.03
Fancy Percales....	.04	"	.04¼
New White No. 1.	.07	"	.07¾
New Light Flannelettes	.05	"	.05¼
Canton Flannel, Bleached	.07	"	—
Underwear Cutters, Bleached	—	"	.07
Silesias No. 1	.05	"	—
New Black Silesias..	3.00	"	3.25
Red Cotton Cuttings	.04	"	.05
Soft Unbleached...	.07	"	.07½
Blue Cheviots.....	.05	"	.05½
Fancy	.02	"	.02½
Washable	.02	"	.02½
Cottons—According to Grades—			
Blue Overalls.....	.04¾	"	.05
New Black, Soft..	.03	"	.03¼
Khaki Cuttings....	.02½	"	.03
O. D. Khaki.....	.02½	"	.03¼
Corduroy	.06¾	"	.07
New Canvas.....	.06¾	"	.07
B. V. D. Cuttings...	.07	"	.07½

Domestic Rags (Old)

(F. o.b. Boston)

White No. 1—			
Repacked	2.75	"	2.75
Miscellaneous	2.40	"	2.60
White No. 2—			
Repacked	1.90	"	2.00
Miscellaneous	2.00	"	2.25
Twos and Blues.....	1.50	"	2.00
Old Blue Overalls ..	1.60	"	2.00
Thirds and Blues—			
Repacked	—	"	1.25
Miscellaneous	—	"	1.00
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.10	"	1.25
No. 2.....	—	"	.77½
No. 3.....	—	"	.67½

Foreign Rags

(F. o. b. Boston)

Canvas	.04¼	@	—
Dark Cottons.....(nominal)			
Dutch Blues.....(nominal)			
New Checks and Blues(nominal)			
Old Fustians.....(nominal)			
Old Linsey Garments.(nominal)			
New Silesias.....(nominal)			

CHICAGO

Waste Paper

(f.o.b. Chicago)

Shavings—			
No. 1 White Envelope cuttings....	3.15	@	—
No. 1 Hard White	2.50	"	2.65
No. 1 Soft White.	2.00	"	2.20
Ledger and Writings	.85	"	.95
Solid Books.....	.95	"	1.10
Blanks	1.50	"	1.60
Krafts	1.40	"	1.50
New Kraft Cuts.....	1.60	"	1.75
Overissue News.....	1.00	"	1.10
Old Newspapers—			
No. 1 Folded News	.70	"	.80
No. 1 Mixed Paper	.40	"	.50
Roofing Stocks—			
No. 1.....	.95	@	1.00
No. 2.....	.85	"	.90

To Control Paper Sales in Indo China

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 6, 1940—Control of sales of paper and stocks on hand in Indo-China is envisaged in a governmental order appearing in the Journal Officiel de l'Indochine Francaise, according to a report from the American Consulate, Saigon.

Beginning July 1, sales of the various kinds of paper by any producer, importer, retailer, or dealer can be made only to purchasers duly licensed by the Supply and Industrial Production Service.

Licenses to purchase paper may be applied for by any purchaser of a quantity amounting to at least 1,000 kilograms a month. Licenses will be valid 6 months.

The importation of paper of foreign origin is still subject to an import permit issued by the Service des Echanges Commerciaux.

Licenses to purchase paper will be granted by the Government General according to the stocks available locally.

Any importer, wholesaler and retailer stocking more than 5 tons of newsprint, 1 ton of writing paper, 1 ton of colored paper, 1 ton of packing paper, 1 ton of cardboard, 1 ton of paper for folders, or 1 ton of thin paper must declare his stocks or expected shipments.

These declarations must be sent in duplicate to the Inspector General of Mining and Industry at Hanoi or to his representative at Saigon.

Every importer, wholesaler, or retailer must also keep a detailed and exact account of the quantities sold, consumed, or received. This account will be inspected now and then by officials appointed for that purpose.